D 7.24:985/2

U. OF FLA. LIB * DOCUMENTS DEPT.
JUL 24 1985
* DEPOSITORY *

SPRING 1985

FUEL LINE

DEFENSE FUEL SUPPLY CENTER CAMERON STATION ALEXANDRIA, VIRGINIA

A Belgian soldier draws a sample from the CEPS for testing at a laboratory.

NATO PETROLEUM: PLANNING AND PIPELINES

DEFENSE FUEL SUPPLY CENTER

SPRING 1985

FUEL LINE *is an official publication, prepared quarterly by and for the Defense Fuel Supply Center and fuel-oriented clientele.* FUEL LINE *is designed to provide timely, factual information on policies, plans, operations, and technical developments of the center, and interrelated subject matter. Views and opinions expressed in* FUEL LINE *are not necessarily those of the Department of Defense.*

*Submissions and inquiries should be addressed to: Defense Fuel Supply Center, ATTN: DFSC-AP (*FUEL LINE *Editor), Cameron Station, Alexandria, Va., 22304-6160. The commercial telephone is: (202) 274-6489, Autovon 284-6489.*

Major photographic and graphic art services are provided by the DLA Administrative Support Center, Technical Presentations Division.

Donald Peters
Public Affairs Officer

Linda Stacy-Nichols
Editor

Pentagon Willing to Buy Some Synthetic Fuels — 1

The fuels would be used to expand research on developing engines for airplanes and land vehicles that run well on a variety of fuels.

Petroleum Planning in NATO — 2

After the oil shortages of 1973 and 1979, international consciousness has been raised about petroleum energy. This article discusses NATO petroleum planning from a U.S. defense vantage.

The NATO Pipeline System — 8

The six military pipeline networks are described as "an excellent example of cooperative logistics," but the authors have a couple of cautions for how logisticians should view the system.

DFR-CR First Element to Receive Joint Meritorious Unit Award — 15

From November 1982 through January 1984, the commander and staff of the Defense Fuel Region (DFR) Caribbean zigzagged from one end of the Caribbean to the other, supplying fuel for operations in Grenada, Honduras, and Ascension Island. They also coped with increasing Strategic Petroleum Reserve quality assurance requirements, intensified routine mission work, and a move from Puerto Rico to Florida. At the end of March 1985, the Defense Logistics Agency Director presented the DFR with a Joint Meritorious Unit Award in recognition of superior work. A civilian member of the region, William Rankin, also received an individual award.

Army Helicopters Can Be Pre-Positioned — 21

The Joint Science Project proved that helicopters could be stored in mission-ready condition. This article discusses what does—and doesn't—happen to fuel and lubricants under proper storage conditions.

Pride Refining Opens Pipeline to Carswell Air Force Base — 22

The new pipeline can carry up to 588,000 gallons of jet fuel daily and is the first phase of a 154-mile project.

Antarctica—The Big Ice Cube Down South — 24

Amid the penguins, whales, and seals live U.S. researchers and support staff who conduct their work in the coldest, driest, windiest place on Earth. DFSC provides the fuel that gets the supply bunkers through.

IMPORTANT NOTICE TO FUEL LINE READERS

We are updating the mailing list for the *FUEL LINE*. In the last edition, we provided a form for those who receive their copies by mail. Subscribers who missed the last copy may send their address label, complete with any changes, to: Commander, Defense Fuel Supply Center, ATTN: DFSC-AP, *FUEL LINE* Editor, Cameron Station, Alexandria, Va., 22304-6160.

Final computer changes have not yet been made but will be completed by the autumn edition. If we do not hear from readers by 31 July 1985, we will remove their names from our subscription list.

Pentagon Willing to Buy Some Synthetic Fuels: But It Says the Price Must Be Right

by Boyce Rensberger

The military would like to begin buying small quantities of synthetic fuels now so that it can expand research on developing engines for airplanes and land vehicles that run well on a variety of fuels.

The Synthetic Fuels Corp., a $17 billion quasi-governmental agency created 5 years ago when it looked as if the cost of conventional fuels would soon rise enough to make synfuels competitive, has fallen on hard times since the start of the oil glut.

Representatives Howard E. Wolpe (D-Mich.) and Mike Synar (D-Okla.) introduced legislation earlier this month to end the corporation's subsidizing of synthetic fuel plants. House Majority Leader James C. Wright Jr. (D-Texas), however, has urged that the program remain as an "insurance policy."

Wright and other supporters of synfuels often cite the crucial role played by synthetic fuels in Germany's military effort during World War II.

"We're vitally interested in ensuring the supply of liquid fuels," said William J. Sharkey, acting assistant secretary of defense for logistics and materials development. "We do a lot of things to make sure we never lose a battle because the tanks run dry, if you will."

Sharkey said the deal offered the synfuels corporation was that the Defense Department would sign long-term contracts guaranteeing purchase of a given quantity of fuel at a price equal to the then-current price of conventional fuel. The corporation would have to make up the difference between the price and the higher cost of the synfuel.

The corporation's board, in response to the Pentagon's offer, unanimously approved an amendment to its business plan giving "some preference" to projects that would specialize in making liquid fuels from coal.

Sharkey said that in the early years of such a deal, the military would buy only a few hundred barrels of fuel per year, fuel to be used in research and development of engines that can run on synfuels.

He said the Pentagon has done preliminary research on this but has not run synfuel-powered engines long enough to see what problems might emerge.

"If conventional fuels are in short supply some day," Sharkey said, "we'll be ready to use synthetic fuels. Of course that day is looking pretty far in the future at the moment." FL

Reprinted with permission from *The Washington Post,* 21 February 1985.

Coal Liquefaction in Germany, World War II

The interest in converting coal to liquids has historically been tied to the availability of petroleum liquids for fuel and chemical production. In oil-short Europe, several processes, developed in Germany, were commercially available in the 1930s. Among these earlier schemes were the:

Bergius Process—The coal was mixed with process-derived oil and catalyst to a pastelike consistency, pumped to 10,300 psig (per square inch gauge) and sequentially hydrogenated with gaseous hydrogen at about 800 degrees Fahrenheit. Primary products were gas fuel and medium boiling point oils that were upgraded to diesel oil and gasoline.

Fischer-Tropsch Synthesis—This was a two-stage process in which a synthesis gas, consisting mainly of hydrogen and carbon monoxide, was initially produced by reacting coal with steam at temperatures over 1500 degrees Fahrenheit, followed by catalytic synthesis of the gas to form hydrocarbon liquids. A wide range of products was derived depending upon the specific process, condition, and type of catalyst incorporated.

Pott-Broche Process—A bituminous coal was dissolved in a process-derived solvent, pumped to about 2,200 psig, and heated to 800 degrees Fahrenheit, extracting 75 percent of the carbon in the feed coal. Products consisted of oil, tar, and electrode grade carbon for the aluminum industry.

These processes were difficult to operate, required high maintenance, and were thermally inefficient. They were, therefore, not economically attractive to U.S. industry which at the time had an abundant supply of cheap petroleum and natural gas. They contributed substantially to the fuel supplies of Germany during World War II, however.

Following the war, the U.S. Bureau of Mines built a pilot plant in Missouri based on the German technology and successfully operated it until the discovery of the Middle East oil reserves in the early 1950s. FL

Based on the COAL LIQUEFACTION TECHNOLOGY report by Fluor Mining and Metals, August 1981.

Petroleum Planning in NATO

by Colonel Carl Jeffers, USAF

THE FLAG OF NATO is a compass display, symbolizing the nations of the Atlantic Alliance steering toward world peace. The circle symbolizes unity. The emblem is white on a blue background.

On the morning of 11 December 1984, the tops news story broadcast by at least one Washington, D.C., area radio station concerned a terrorist attack on a North Atlantic Treaty Organization (NATO) pipeline system in Belgium. (There were several detonations at various locations within the pipeline). The news item was noteworthy for two reasons. It focused public attention, however, briefly, on an aspect of military logistics with which the private citizen may not be familiar. The news account also highlighted the importance terrorists place on the petroleum distribution system and its effect on NATO's military abilities.

While damage done to the sabatoged portion of the Central Europe Pipeline System (CEPS) was relatively minor, the significance of the act should not be underestimated. Refined petroleum products are the lifeblood of the modern military machine. Their continued availability, in proper quantities and qualities, is vital to peacetime readiness and wartime sustainability. The terrorists made a tacit statement with this act of violence: they recognize the pivotal role that petroleum plays in military operations.

In a recent issue of *NATO Review* Tom Cutler, of the Office of International Affairs at the Department of Energy (DOE), and currently chairman of NATO's Petroleum Planning Committee (PPC), addressed NATO's oil supply concerns at some length.[1] As Mr. Cutler explained, these concerns principally focus on the relative dependency of European NATO nations on external sources of oil supply. This dependency generates vulnerability. This article borrows from Mr. Cutler's efforts, but broadens his scope to deal with NATO's overall approach to supplying petroleum fuels for the military. In addition, this article briefly discusses some of the NATO petroleum supply issues that are of current interest to the Department of Defense (DOD).

At this writing, the so-called "tanker war" being waged in the Arabian Gulf by Iran and Iraq has begun to heat up again. These and similar hostilities focus NATO's attention on the degree to which member nations are dependent on Gulf sources of oil and what vulnerability level derives from that dependency. The PPC is the NATO entity most sensitive to this issue and the one charged with establishing plans and procedures for meeting alliance petroleum needs during crisis and war.

PETROLEUM PLANNING COMMITTEE

The PPC is one of eight planning boards and committees under NATO's Civil Emergency Planning Directorate (others are concerned with food and agriculture, industry, civil aviation, civil defense, et al.). The PPC is composed primarily of energy or petroleum specialists from the various member nations. Representatives from the NATO International Staff, Supreme Headquarters Allied Powers Europe (SHAPE), Headquarters of the Supreme Allied Commander Atlantic, the International Military Staff, and the oil industry also attend the PPC's regular and working group meetings. The Senior Civil Emergency Planning Committee (SCEPC) provides policy direction and general coordination for the PPC, which was founded in 1952. The PPC's task at its inception is one that continues today: identify wartime petroleum requirements for military and civilian sectors of NATO and do the peacetime planning necessary to meet those requirements whenever possible. This planning encompasses assessments of NATO vulnerability to supply interruption and evaluation of changing market conditions and fluctuating civilian and military demand.

NATO WARTIME OIL ORGANIZATION

Just as its sister planning boards and committees under SCEPC have done, the PPC has created a standby activity—known as a NATO civil wartime agency—(NCWA)—that would be activated in emergencies. The organization, essentially, would supplant peacetime planning functions with wartime "operational" functions. For the PPC, this civil wartime agency is the NATO Wartime Oil Organization (NWOO). The NWOO's role is to provide "the forum for consultation on, and coordination of, the plans of member nations to ensure the continued availability and equitable distribution, for both civil and military purposes, of essential supplies of crude oil and petroleum products."[2]

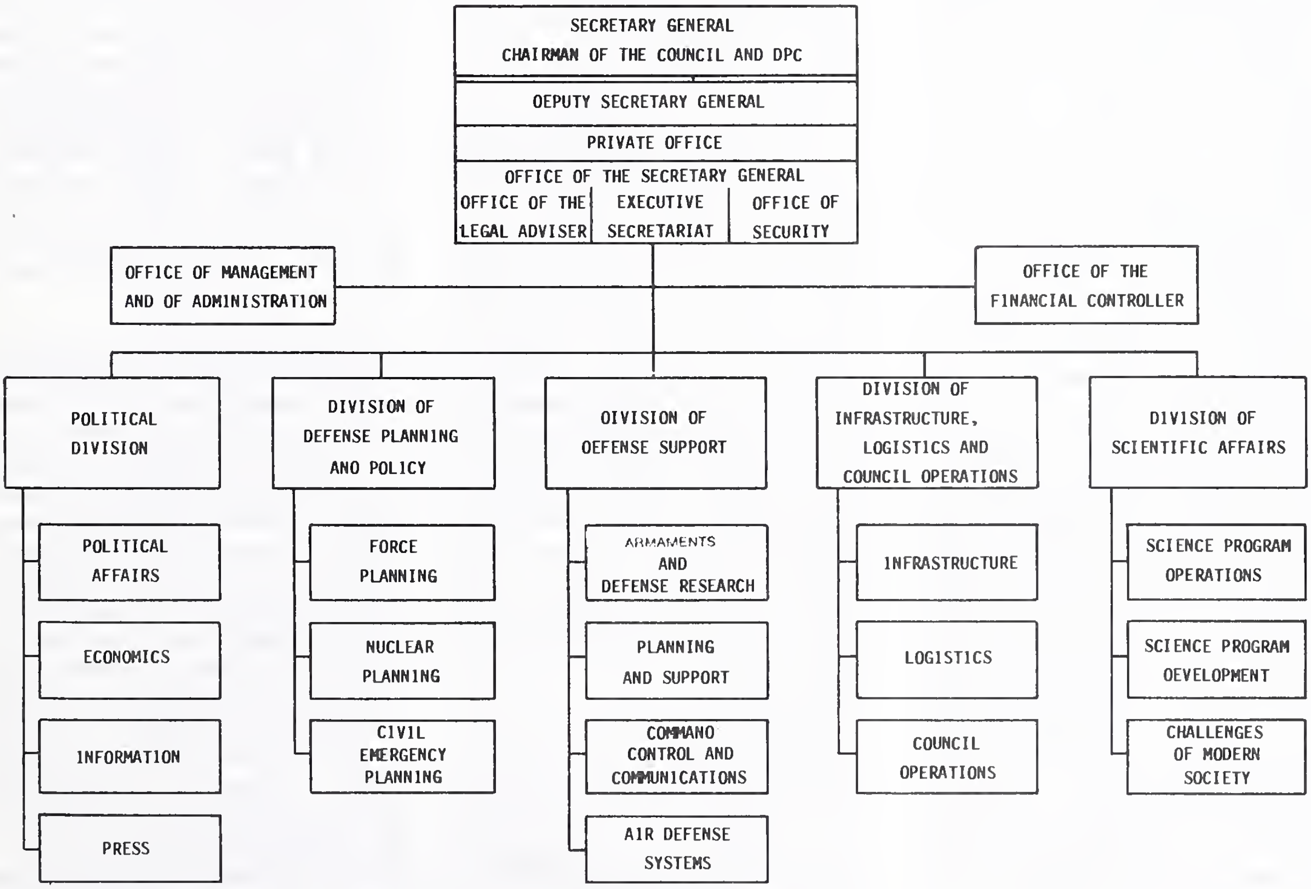
It is worthwhile to dwell for a moment on the organization of NWOO in order to appreciate how it would function in a wartime emergency:

> "The NATO Wartime Oil Organization consists of three organizational bodies. The Joint Operational Staff (JOS) would be manned by industry experts from throughout the alliance and would recommend actions for NATO to take based upon technical analysis of the oil supply situation and NATO's petroleum needs. These proposals would be reviewed by the NATO Oil Executive Board (OEB) composed of member government representatives who would play a senior policymaking role by deciding, on the basis of JOS recommendations, how NATO oil supplies should be shared and, if necessary, collectively procured. Executive Board decisions would be implemented by National Oil Boards (NOB) which play an important role. Based in capitals, and usually housed within national oil ministries [such as the DOE in the United States], the NOBs not only take the necessary national actions to carry out NATO oil supply policies, but also provide the basic energy data used by the JOS in its analysis."[3]

The NWOO is more than just an idea on paper. Nations have identified agencies, positions, and individuals who would constitute their NOBs; they have appointed national representatives to the NATO OEB; and numerous industry representatives from Europe and North America have been designated members of the JOS. Of even greater importance, however, is that these organizations and people have trained together in full-scale emergency situations. The lessons learned from these exercises have strengthened NWOO and helped prepare players for the roles they would play should "the real thing" ever require NWOO activation.

It is natural for the reader to speculate about NWOO's efficacy for the military sector in wartime. Those who have spent much time in Europe have undoubtedly heard the NATO dictum: "Logistics is a national responsibility." Most readers are aware, moreover, of the extensive plans the U.S. DOD has made to provide fuel to its own forces in NATO contingency situations.

NATO International Staff


SECRETARY GENERAL
CHAIRMAN OF THE COUNCIL AND DPC
DEPUTY SECRETARY GENERAL
PRIVATE OFFICE
OFFICE OF THE SECRETARY GENERAL
OFFICE OF THE LEGAL ADVISER
EXECUTIVE SECRETARIAT
OFFICE OF SECURITY
OFFICE OF MANAGEMENT AND OF ADMINISTRATION
OFFICE OF THE FINANCIAL CONTROLLER
POLITICAL DIVISION
POLITICAL AFFAIRS
ECONOMICS
INFORMATION
PRESS
DIVISION OF DEFENSE PLANNING AND POLICY
FORCE PLANNING
NUCLEAR PLANNING
CIVIL EMERGENCY PLANNING
DIVISION OF DEFENSE SUPPORT
ARMAMENTS AND DEFENSE RESEARCH
PLANNING AND SUPPORT
COMMAND CONTROL AND COMMUNICATIONS
AIR DEFENSE SYSTEMS
DIVISION OF INFRASTRUCTURE, LOGISTICS AND COUNCIL OPERATIONS
INFRASTRUCTURE
LOGISTICS
COUNCIL OPERATIONS
DIVISION OF SCIENTIFIC AFFAIRS
SCIENCE PROGRAM OPERATIONS
SCIENCE PROGRAM DEVELOPMENT
CHALLENGES OF MODERN SOCIETY

The PPC certainly recognizes such national responsibilities. It is not NWOO's intention to usurp national prerogatives in wartime fuel combat support, but to provide prudent contingency planning in case national defense ministries cannot meet demands for wartime fuel. It is certainly in the member nations' basic interests to insure that NWOO accords appropriate priority to the military sector. To this end, the NATO OEB would receive counsel from selected military representatives during policymaking deliberations. The United States and a number of other member nations incorporate military advisors in the structure of their NOBs. These military representatives train alongside their civilian counterparts in NWOO training exercises.

It should be noted that, contrary to the *modus operandi* of the International Energy Agency (IEA), the NWOO does not plan to use a rigid oilsharing scheme which would be triggered by a specified reduction in oil supply availability (whether for individual or collective members). The PPC value flexibility in such matters, allowing the NWOO to respond effectively to changing defense priorities and civilian needs.

There are those who have questioned the potential for conflict of interest, duplication of effort, or diminution of effectiveness with the coexistence of two oilsharing bodies—the IEA and NWOO. (The two groups also have a strong commonality of membership.) The U.S. General Accounting Office, for one critic, has carefully studied this issue. At the risk of gross oversimplification, suffice it here to note that the two activities have dissimilar charters and would most likely function at wholly separate times. The IEA is intended to promote international energy cooperation during crises short of war; the NWOO would normally only be activated if oil supply disruption was concomitant with, or appeared to be leading to, armed hostilities.

> *"Refined petroleum products are the lifeblood of the modern military machine. Their continued availability, in proper quantities and qualities, is vital to peacetime readiness and wartime sustainability. The terrorists made a tacit statement with this act of violence: they recognize the pivotal role that petroleum plays in military operations."*

NATO PIPELINE COMMITTEE

The NATO Pipeline Committee (NPC) is another petroleum-centered NATO entity, one which has gained renewed vigor in recent years. The organization falls under the control of the Assistant Secretary General for Infrastructure, Logistics, and Council Operations, and is chaired by the Director for Logistics. Originally established in 1956, the NPC's purpose is to act for the North Atlantic Council on all matters connected with the control, operation, and maintenance of the NATO pipeline system.

That system is regionally based and currently consists of seven networks of petroleum pipelines and associated tanker ports, storage facilities, rail and truck-loading sites, et cetera. The largest of these by far is CEPS, which was slightly damaged last December. It consists of more than 5,900 kilometers (3,680 miles) of pipeline extending through five countries: France, the Netherlands, Belgium, Luxembourg, and the Federal Republic of Germany. There are other NATO pipeline networks in Turkey (two separate systems), Greece, Italy, Denmark (which reaches into North Germany), Norway (primarily storage facilities), and the United Kingdom.

National pipeline organizations, acting in consultation with NATO military authorities, operate and maintain the various systems. In the case of CEPS, it is separated for operation and maintenance into seven national pipeline divisions. The Central Europe Operating Agency (CEOA), a central coordinating and controlling body, provides overall direction to the giant network. The CEOA, in turn, is responsible for two other NATO international governing bodies. The Central Europe Pipeline Office, the military contingent of the two, develops general military logistic policy. The Central Europe Pipeline Policy Committee is the political and financial arm. These two multinational NATO bodies are made up of representatives of eight user nations (the five previously mentioned plus the United States, Canada, and the United Kingdom). These bodies establish military, political, and financial policy for the CEPS, which some have described as the greatest NATO example of coalition logistics.

OTHER POL-RELATED BODIES

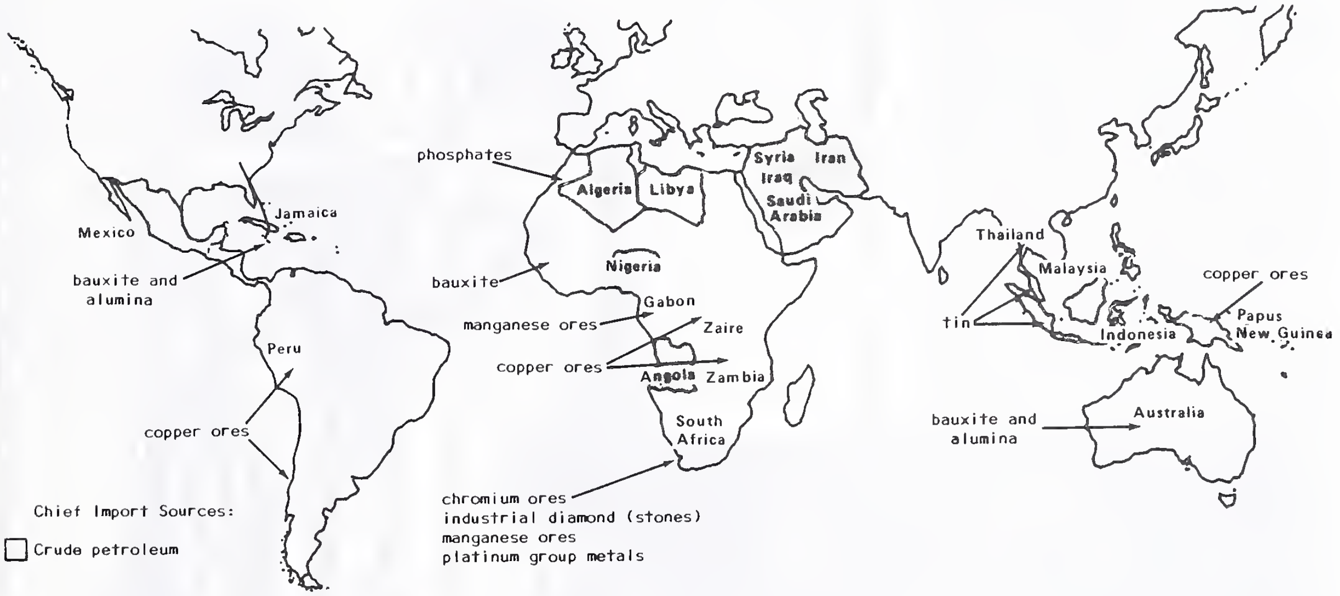
For completeness, two other NATO bodies deserve mention for the roles they play in NATO petroleum, oils, and lubricants (POL) logistics. Both are transportation-oriented and are responsible for more than just petroleum. The Planning Board for Ocean Shipping (PBOS), acts as a multinational policy forum concerned with peacetime planning for NATO maritime logistic support. The Planning Board for European Inland Surface Transportation (PBEIST) performs a similar function for overland logistic support in Europe. The PBOS and PBEIST are sister planning committees to the PPC,

Dependency on Non-NATO Sources of Petroleum

(average 1981–83)

	% of Petroleum Consumption	% of Total Energy Consumption
All NATO countries	46	21
Canada	19	6
France	95	44
Federal Republic of Germany	60	26
Italy	98	61
United Kingdom	38	13
United States	32	11
Other NATO countries	52	50

NATO Overseas Import Dependency



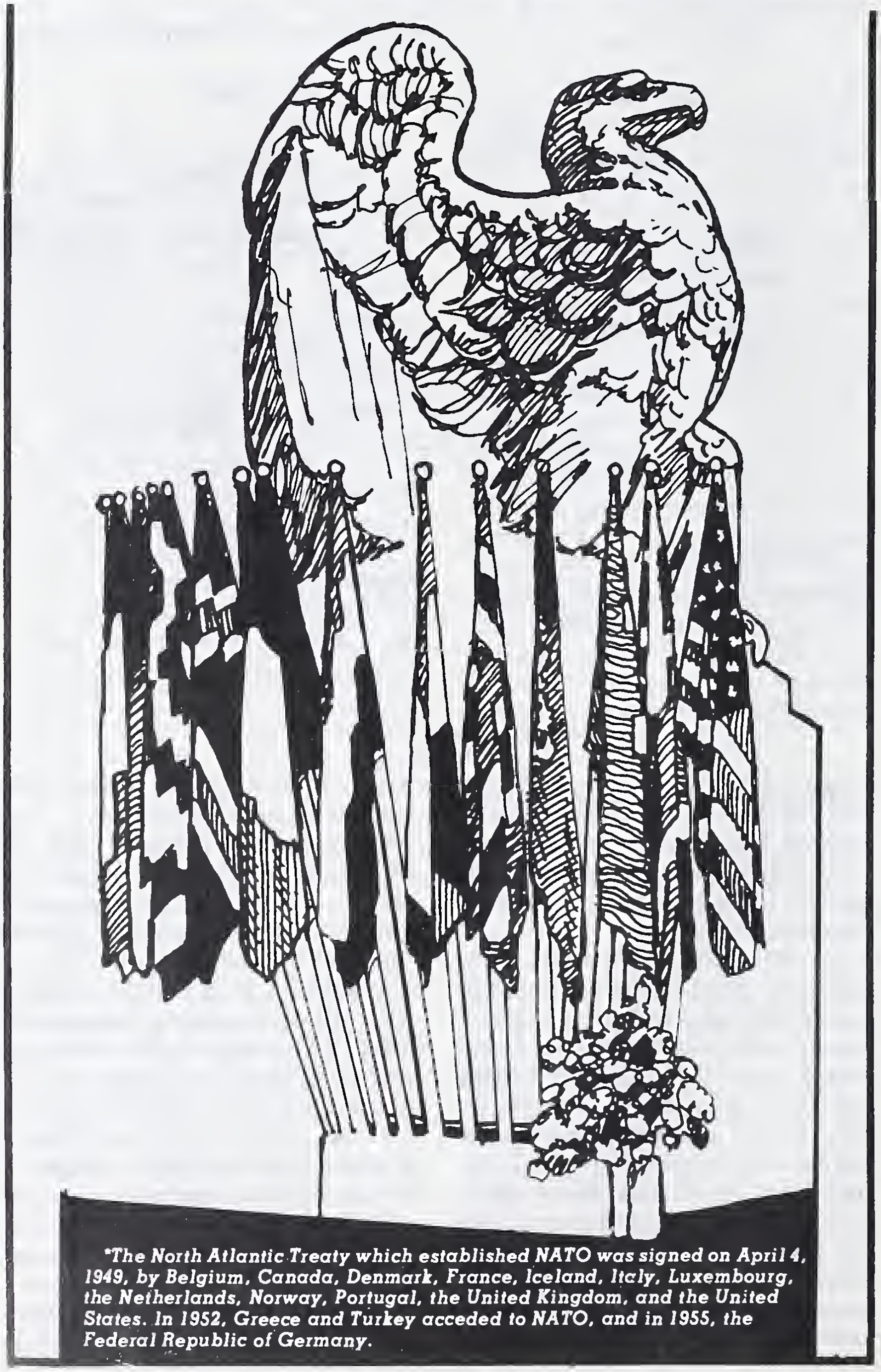
which was discussed earlier. In recent years, the three bodies have reached higher levels of coordination and cooperation on planning matters for NATO oil support during crisis and war.

In 1979, NATO officials took note of the numerous NATO organizations which have an interest in petroleum logistics. NATO determined that the alliance would benefit by a more formal recognition of this multidisciplinary concern for military and civilian oil supply. The NATO Inter-Staff Group on Petroleum was created as a central focal point. The group consists of staff officers from the NATO international staff (civil and defense) and SHAPE; their duties involve support to petroleum-related committees and organizations. The petroleum staff officers from the PPC and the NPC, for example, are all members of the Inter-Staff Group. One of the first formal tasks undertaken by this group was the development of a NATO response to a U.S. Secretary of Defense request. DOD asked that NATO study the possibilities for enhanced host-nation petroleum support to reinforcing nations (United States, Canada, and the United Kingdom) in a NATO contingency. The benefits of that early cross-disciplinary study continue to accrue.

Defense officials in Washington are keenly aware of the vital importance of adequate petroleum support to NATO civilian and military sectors during wars and crises. They and their counterparts in other government agencies are involved on a daily basis in establishing and promulgating U.S. policy on NATO energy matters and in providing U.S. representation to various NATO petroleum fora.

To promote commonality of purpose and to create greater interagency cooperation, the Director for Energy and Transportation Policy at the Office of the Secretary of Defense (OSD) has held two working conferences on U.S./NATO energy policies, one in 1982 and one in 1984. Representatives throughout the federal government who are in some way concerned with NATO petroleum gathered together in the Pentagon during the 2-day conferences. This article is not the proper vehicle to explore thoroughly the issues discussed in these working conferences. It is instructive, however, to note some of the subjects which were of special concern to DOD and NATO during this period. The August 1984 conference included detailed discussion on:

- *Increased Commercial Use of CEPS.* The CEPS governing policy permits commercial use of CEPS, on a tariff basis, when this use doesn't impede the primary mission of defense support. Several NATO bodies are addressing the benefits that would accrue to CEPS from enhanced commercial revenues and whether it is possible to attract more commercial business.
- *Adoption by NATO Forces of Commercial Specifications for Ground Fuels.* For several years, member nations have been deliberating the potential merits and possible disadvantages of adopting commercial specifications, in lieu of more rigid military specifications, for motor gasoline, and diesel fuel. Potential benefits include increased product availability and, perhaps, increased commercial use of CEPS. Possible degradation in equipment operation and performance is among the potential disadvantages.
- *Progress Toward Conversion to JP-8 Turbine Fuel in NATO Europe.* Since the mid-1970s, NATO nations have been working toward adoption of JP-8 turbine fuel as the standard landbased jet aircraft fuel in NATO Europe. For the most part, all agree on the benefits to be derived: increased handling safety, improved crash and hostile fire survivability, and the merits of standardizing on the military version of the standard commercial jetfuel in Europe (JET A-1). Concerns remain, however, about the need to modify selected aircraft to meet NATO operational criteria when using JP-8 and the impact on defense budgets if the price of JP-8 was higher than the price of JP-4.
- *Sharing of Petroleum Market Information.* DFSC Directorate of Contracting and Production managers would like to share petroleum market information and discuss contractual mechanisms with their military purchasing authority counterparts in other NATO countries. If this interchange is pursued consistently with antitrust legislation and with safeguards for proprietary information, the sharing nations all stand to benefit.



***The North Atlantic Treaty which established NATO was signed on April 4, 1949, by Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States. In 1952, Greece and Turkey acceded to NATO, and in 1955, the Federal Republic of Germany.**

- *Adequacy of NATO Infrastructure Funds for POL Projects.* DOD petroleum officials have occasionally expressed concern about the level of NATO infrastructure funding of POL projects (storage facilities, pipelines, and the like), relative to the funding for non-POL items such as aircraft shelters, munitions storage, and similar expenses. These concerns were spawned in an information vacuum; there were suspicions that POL did not fare as well as other items in the funding competition. These concerns were effectively dispelled by the consultant's report that formed the basis for the OSD 1984 working conference. In relation to other items, POL projects appear to have competed quite well in recent years. As in all items which compete for limited fiscal resources, of course, some plans must be deferred to later years.

FINAL THOUGHTS

If any conclusion can be drawn from this brief discussion of NATO petroleum matters, it is probably that, for a somewhat arcane specialty, petroleum logistics receives considerable attention in NATO. This is as it should be. If anything nice can be said about the unfortunate oil shortages of 1973 and 1979, it is that they raised the collective international consciousness about petroleum energy. That heightened awareness has made it somewhat easier for petroleum logisticians to "have their cases heard" in fora such as NATO. The NATO community, including members of the North Atlantic Council itself, continues to show strong interest in matters relating to oil supply for civil and military sectors. This can only be good for the alliance. FL

---

1. Cutler, Tom, "NATO and Oil Supply Vulnerability—The Role of the Petroleum Planning Committee," *NATO Review,* Volume 32, Number 5, Brussels, Belgium, October 1984.

2. NATO Information Service, *North Atlantic Treaty Organization Facts and Figures,* Brussels, Belgium, 1981, pages 157-158.

3. Cutler, pages 27-28.

Colonel Carl M. Jeffers, USAF, is the director of the DFSC Office of Planning and Management. Prior to his DFSC assignment, Colonel Jeffers was assistant for petroleum logistics and acting deputy director, energy programs, with the Office of the Assistant Secretary of Defense for Manpower, Installations, and Logistics. He has also served as senior fuels advisor to the Vietnamese Air Force at Tan Son Nhut Air Base, Saigon; as command fuels officer of Air Training Command Headquarters, Randolph Air Force Base, Texas; as chief of the Plans, Programs, and Conservation Branch, Energy Management Division, Headquarters, U.S. Air Force; and as staff fuels officer, J-4, Organization of the Joint Chiefs of Staff, Pentagon. Colonel Jeffers holds a bachelor of arts degree in geology from Duke University, N.C., and a master's degree in international relations from the University of Southern California. He is a graduate of the Industrial College of the Armed Forces.

ACRONYM KEY
CEOA: Central Europe Operating Agency
CEPS: Central Europe Pipeline System
IEA: International Energy Agency
JOS: Joint Operational Staff
NCWA: NATO Civil Wartime Agencies
NOB: (NATO) National Oil Board(s)
NPC: NATO Pipeline Committee
NWOO: NATO Wartime Oil Organization
PBEIST: Planning Board for European Inland Surface Transport
PBOS: Planning Board for Ocean Shipping
PPC: Petroleum Planning Committee
SCEPC: Senior Civil Emergency Planning Committee
SHAPE: Supreme Headquarters Allied Powers Europe

The NATO Pipeline System

by Major General Homer D. Smith, USA (Retired), and Lieutenant Colonel David A. Simpson, UKAR (Retired)

Last year marked the 25th anniversary of the Central Europe Operating Agency, the North Atlantic Treaty Organization (NATO) agency responsible for the day-to-day operation of the NATO Central Europe Pipeline System (CEPS). The directors of this system met at Versailles, headquarters of the agency, on this silver anniversary to reflect on the pipeline's quarter century of programs and to conjecture about its potential. Although CEPS has some operational and organizational peculiarities, generally speaking it epitomizes the cooperative logistics that characterize all networks of what is collectively known as the NATO pipeline system.

Under the petroleum category of the NATO common-funded infrastructure program, six military pipeline networks and other petroleum facilities have been constructed. These six networks are located in Denmark and Germany (a network continuing just over the border into North Germany and known as the North European Pipeline System); the United Kingdom; Central Europe (which includes France, Germany, and the Benelux, all parts of CEPS); Italy; Greece; and Turkey.

A Belgian conscript works at one of six networks comprising the NATO Pipeline System.

In 1952 the decision was made to construct a number of storage tanks in various NATO countries to hold reserves of jet fuel. Wherever possible, these tanks would be connected by pipelines. Even though in retrospect it seems there could have been no other solution, in a purely European context the initial decision is important, even historic, in the product pipeline business. This is because, in Western Europe, commercial activity in developing pipeline systems did not begin until after World War II.

The first major product commercial pipeline, from LeHavre to Paris, was commissioned in 1953. Six years later, the first crude pipeline in Western Europe was opened from the North Sea ports southward into Germany to serve the island refineries. Since then, new lines have been laid for both crude oil and its products, but more activity has been directed toward distributing natural gas. Regrettably, market factors have brought the commercial crude and product pipeline business to a virtual standstill. More recently, lines have been shut down because of related refinery closings.

In contrast, the defense-related NATO pipeline activity that started in 1952 has continued and, contrary to the trend in the commercial sector, further movements are planned.

For the military, there is nothing new about using pipes to transport liquid. During the Persian Campaign in Egypt in 565 B.C., pipelines made of goat skin were used to supply water to forces in the desert. The Chinese probably used bamboo for this purpose even earlier. In more recent history, there are many examples of pipes used to provide water in the field. But it was not until the early 1940s that the first pipelines were used to convey military fuel.

To solve the difficulty of transporting fuel from England to the continent for the Normandy invasion and the subsequent breakout, lines were laid on the bed of the English Channel in two places. The most famous of these was Pluto, an acronym for pipeline under the ocean. The less well-known group of pipelines was named after another Walt Disney character, Dumbo.

With World War II, adequate supplies of fuel became a supply requirement of warfare; without fuel, today's military systems are paralyzed. The vulnerability of fuel-carrying vehicles and the delays imposed by the bombing of roads, railways, bridges, and approaches to airfields—together with constantly increasing requirements of the heavily mechanized forces—made it clear that the traditional means of transport would be unable to meet all the fuel requirements. An alternate method of supply was needed, one which would ensure ready availability of adequate supplies of strategic fuel. These considerations stimulated military planners to recommend that the supplies for jet aircraft, which consume large quantities of fuel, be provided by a combination of storage tanks and connected pipelines. The idea also appealed to the land forces, who sought access to the same pipelines to move motor fuel for Army tanks and trucks.

THE BEGINNING

In December 1952, the North Atlantic Council approved a commonly financed "infrastructure" program. Within this framework, construction of NATO petroleum facilities was launched. Although initial emphasis had been placed on fuel storage tanks, the program was gradually expanded to include a buried pipeline and storage system. The result is the most complicated and extensive (and perhaps the largest) system of product pipelines in the world, which continues to be expanded. That it is a model of successful coalition logistics is to be attributed to joint financial, managerial, and engineering efforts.

Some general points, common to all NATO-petroleum-category facilities, are appropriate to set the scene. Such facilities are military, first and foremost. They are designed, constructed, and operated in accordance with criteria established by NATO military authorities to meet clearly defined but dynamic storage and delivery requirements. The facilities offer a measure of protection, operate individually from commercial power sources,

"For the military, there is nothing new about using pipes to transport liquid. During the Persian Campaign in Egypt in 556 B.C., pipelines made of goat skin were used to supply water to forces in the desert. The Chinese probably used bamboo for this purpose even earlier. In more recent history, there are many examples of pipes used to provide water in the field. But it was not until the early 1940s that the first pipelines were used to convey military fuel."

and provide flexibility in both receiving and delivering fuels, thereby contrasting with their commercial counterparts. There is a continual awareness of the need to keep abreast of new technology, both to protect the environment and to further develop the system.

The NATO petroleum facilities are designed to provide surge capabilities in a wartime environment and, therefore, can handle more product than normally required for peacetime military operations. Under certain conditions, it has been possible to make the spare peacetime capacity of the system available to civilian oil companies. Although such peacetime use is encouraged, it has not been significant. When it has occurred, however, the revenue brought in has been directed toward operation and maintenance costs, which in all instances are borne by the user nations.

A laboratory worker checks the quality of petroleum being distributed through the pipeline.

Nations have the responsibility of procuring the fuels to maintain mutually agreed upon inventory levels. In accordance with a charter agreed to by the NATO Council, these nations also must ensure that the networks will be able to meet NATO military wartime requirements without losing time in the transitioning process. To this end, each network has developed its own national organization to ensure that the facilities are maintained in proper physical condition, that the staffs at all levels are properly trained and ready to play their part in war, and that security is adequate. The same requirements apply to petroleum facilities which are not geographically connected to a network but which are constructed under the same category of the NATO program that pertains to pipelines. The majority of these facilities are called "off-base depots" and normally provide support to a nearby NATO airfield.

DESCRIPTION OF THE NATO PIPELINE SYSTEM

North Europe. Farthest to the North, in Norway, there is no main pipeline but rather a number of off-base depots, covering the needs of both air and ground forces. Many are served by coastal tanker input points.

The oldest NATO pipeline network is located in Jutland. It has been extended across the Danish border into Northern Germany. Known as the North European Pipeline System (NEPS), it is essentially linear with about 600 kilometers of pipelines and interconnected depots. It serves a number of air bases that are directly connected to the main pipeline and it has a multiproduct capability. It is the only NATO system that provides support to naval forces as well, which was achieved by adopting the same standard primary diesel fuel for both ground and naval operations. The part of the NEPS located in Denmark is operated and managed by the Danish Defense Construction Service; the part located in Germany by the *Fernleitungs-Betriebsgesellschaft*. Like the CEPS, the NEPS uses a "bank" system for products.

> *"For the military products, CEPS acts as a bank in which individual national products are pooled. This procedure requires formal agreement among the nations involved for chemical and physical characteristics of the products. Each nation's product is checked for quality and quantity; upon passing the check, the supplying customer is credited with the quantity introduced. From that moment, the product loses its identity as to ownership."*

United Kingdom. The newest construction is the single-product network in the United Kingdom, which augments the existing government system to provide jet fuel to the U.S. Air Force. Additionally, some off-base depots have been provided under the NATO program. Unlike the system of all other countries except France, this network is standardized to use a kerosene-based jet fuel similar to the common-user commercial JET A-1.

CEPS. Whereas all other NATO networks are linear, CEPS has a complex configuration that provides great flexibility. As the largest system, its organization is also more complex than any of the other systems because it lies in several countries: Belgium, France, the Federal Republic of Germany, Luxembourg, and the Netherlands. In addition to these five "host" countries, Canada, the United Kingdom, and the United States are also users of CEPS. These eight nations joined together to operate and maintain the system through an integrated multinational organization.

The Central Europe Operating Agency, introduced at the beginning of this article, is the integrated international agency that supervises the whole operation of CEPS. It has a general manager and a staff of more than 70 persons. There are also seven national divisions—three French, two German, and one each in Belgium and the Netherlands. France and Germany coordinate their divisions through national agencies. The Belgian division is militarily operated, while that of the Netherlands is governmentally controlled. More than 1,500 persons are involved.

The system comprises more than 6,300 kilometers of pipelines, over 100 main pump stations, and about 60 storage depots. Although the pipeline was built as a military system, peacetime civilian traffic has expanded the scale of operations in some sections. This increased use provides valuable peacetime training and contributes financial support, thereby helping the system meet its operation and maintenance costs as well as its modernization efforts.

For the military products, CEPS acts as a bank in which individual national products are pooled. This procedure required formal agreement among the nations involved on the chemical and physical characteristics of the products. Each nation's product is checked for quality and quantity; upon passing the check, the supplying customer is credited with the quantity introduced. From that moment, the product loses its identify as to ownership. The customer can withdraw or obtain products of the same type at any point in the CEPS.

Unfortunately, this procedure is usually confined to military products since common-user civil fuels do not generally have the same chemical and physical characteristics as the military equivalents in the bank. This means that batches of civil fuel remain segregated to retain their identity, thereby producing movement delays. Studies are being made to see if it is possible to achieve greater compatibility between military and civil fuels.

The two directing bodies of the CEPS are the Central Europe Pipeline Policy Committee and the Central Europe Pipeline Office. The committee is comprised of civilian personnel from national delegations to NATO. The committee handles policy matters, particularly those dealing with finances. The Pipeline Office is chaired by the assistant chief of staff for logistics, Allied Forces, Central Europe, Headquarters. It is composed of user-nation Army and Air Force petroleum officers.

Italy. Further south, in Italy, there is a multiproduct network in the northern part of the nation plus a number of off-base facilities elsewhere on the mainland and on the islands of Sardinia and Sicily. Some 600 kilometers of pipeline with interconnected depots have been constructed for NATO airfield supply. The system is under the operational control of the Italian air force, but its day-to-day operation is handled under contract by a commercial organization.

Greece. The system in Greece also covers some 600 kilometers and has interconnected depots. It has a multiproduct capability, but in contrast to the pipeline in Italy, is operated by military units.

Turkey. In Turkey, there is an east and a west network, each roughly 1,000 kilometers long. Since the pipeline networks were constructed across high mountain ranges, it is difficult to contemplate a similar civilian undertaking. Terrain considerations call for special skills in operating the pipeline, which is undertaken by an agency linked to the state-owned oil company. This agency operates both the system and the off-base facilities. The system provides both jet fuel and automotive gasoline.

NATO PIPELINE COMMITTEE

Taken as a whole, there has been a considerable investment over the years in the petroleum, oils, and lubricants (POL) category of the NATO common-funded infrastructure program. At 1983 prices, the investment totals over $2.8 billion! Provisions have been made to cope with not only the day-to-day operation of the expensive program but also the supervisory aspects associated with such an investment.

In recent years, the supervisory aspects have become more pressing. There is a renewed impetus toward planning improvements, maintenance, restoration, modernization, and concern in other areas. These programs are scheduled to be implemented, but projected short- and medium-term costs are prodigious. Restoration is a particularly urgent concern now that many components of the system have passed their projected lifespans. Only with improvements can the system keep pace with the increasing fuel requirements of the new-generation aircraft, tanks, and other equipment.

These various programs represent not only a considerable investment of work by the national and international staffs of the pipeline systems; they also call for an additional large monetary investment by all nations. At a time of limited national and common funds, the role played by national staff in preparing project documentation is extremely important.

> *"In the final analysis, attaining the goal of fuel sustainability rests largely with refiners. Greater cooperation would provide for more peacetime use of NATO facilities by the oil companies in moving jet fuel to civil airports and more connections of major civil oil storage installations. These measures, however, are blocked by differences in specifications of fuels deemed acceptable to the military and those of fuels in common use on the civil retail market."*

Together with accurate and timely project submissions, there must be concerted efforts to ensure that petroleum projects are given a high enough NATO priority to survive the approval process. Restoration of NATO facilities is necessary if the original investment is to be protected. At the same time, supervision, assistance, and maintenance must be intensified to ensure that standards are met, thereby eliminating untimely restoration expenses whenever possible. These tasks fall largely on the military and civilian international NATO staff, but also depend on the total support of national staffs and the pipeline organizations. Coordination of all matters relating to the operation and maintenance of the pipeline systems must, however, be the responsibility of a single NATO body: this is the task of the NATO Pipeline Committee.

The committee is composed of representatives of each NATO member country. By charter, the committee acts on behalf of the NATO council on all matters of NATO-wide conern. The committee works in full cooperation with the NATO military authorities and the other organizations directly involved with each network.

The Pipeline Committee meets twice a year and is chaired by the director of logistics of the NATO international staff. It is important to emphasize that this committee has no responsibility for the NATO-wide investment in petroleum facilities constructed at naval or air bases, accomplished under separate categories of the NATO common-funded infrastructure program. The class III (POL) support element of the forward storage site program is similarly independent, although there is a close liaison in both location planning and design criteria.

ONGOING EFFORTS

In recent years, there has been greater cooperation with the oil industry. It has taken a number of forms, but only key aspects will be discussed. Resupply flexibility is essential to the proper operation of the networks of the NATO pipeline system. The layout of the system was originally based upon products from tankers at one or more sea entry facilities. Later, on the initiative of either NATO military planners or the oil industry, refineries and commercial depots were connected. In the case of the CEPS, potential civilian customers found it expedient to effect such connections for their own purposes, and this has been particularly welcome.

At the present time, over 25 refineries are directly connected to the various networks, and there are plans to connect more. In this context, the recent shakeup of oil industry operations in NATO Europe has been significant. Under the auspices of the NATO Pipeline Committee, a closer working relationship with the oil industry has been established, resulting in closer coordination with regard to such key events as refinery closures. The possibility of joint ventures, mutually beneficial to both parties, is being examined. A review of NATO priorities has already been undertaken because of changes in the civil oil operational pattern.

In the final analysis, attaining the goal of fuel sustainability rests largely with refiners. Greater cooperation would provide for more peacetime use of NATO facilities by the oil companies in moving jet fuel to civil airports and more connections of major civil oil storage installations. These measures, however, are blocked by differences in specifications of fuels deemed acceptable to the military and those of fuels in common use on the civil retail market.

Optimists believe that the desired civil-military jet fuel compatibility can be achieved in the next 5 years. Experience with the North European Pipeline indicates that there are no insurmountable problems in using the commercial equivalent of the military's automotive gasoline.

A coastal tanker delivers petroleum to storage tanks of the Central European Pipeline System.

The caution that some nations exhibit, however, indicates it will be some time before all NATO nations agree to universal compatibility. This problem is compounded by the lack of a standard civil specification among the host nations of the CEPS. Perhaps the final solution will be a compromise among all parties; an approach that may be the only way of solving the diesel fuel problem.

Awareness of the importance of petroleum logistics is not confined to those immediately and directly involved in the business. The NATO pipeline system is recognized as a major contribution to the bulk fuel distribution system for allied forces. But it is important that logistics planners recognize it as only a link in that chain. They must ensure that there is the capability to distribute the fuel to allied forces forward of the system terminals, the final and most important link in the chain.

MORE THAN LINES ON A MAP

For many, the NATO pipeline system (or, for that matter, any pipeline system) is only lines on a map. Those lines can become an obsession or an illusion. They can become an obsession if, at all costs, new lines must be added to the map to indicate progress, if not to achieve accolades. There is also the illusion that the mass of lines representing commercial pipelines on a map of NATO Europe indicates there is no need to further develop the NATO system. In reality, there are very few pipelines in Europe devoted solely to civil products. In cases where they have military potential, appropriate measures have been or are being taken to include their use if needed. We should note that none of these civilian pipelines completely meets NATO requirements.

There is another and more serious illusion associated with the NATO system. This is the illusion of the enthusiastic planner who, seeing a line on a map and not seeking professional petroleum advice, assumes that the system represented by those lines has infinite capability to support his plan.

After more than 30 years of NATO pipeline operation, there is a hard core group of NATO pipeline system professionals. While the facilities of the system that these professionals manage are buried and therefore not conspicuous, the people *are* visible. When consulted, they show enthusiasm and provide the advice planners request and need.

The NATO pipeline system is an excellent example of cooperative logistics. Only with cooperation that is continually renewed can the countries of the NATO alliance protect, build upon, and effectively use the NATO pipeline system. That system is an indispensable and impressive investment, for it provides a means of supplying and sustaining allied forces with bulk fuels. **FL**

ARMY LOGISTICIAN, January-February 1985.

Lieutenant Colonel David A. Simpson, UKAR (Retired), formerly a member of the Royal Army Ordinance Corps, has been active in the petroleum field since 1956. He joined the NATO international staff as the petroleum staff officer of the Logistics Directorate in 1982. Simpson is a Fellow of the Institute of Petroleum.

Major General Homer D. Smith, USA (Retired), became the first director of logistics of the NATO international staff in Brussels shortly after his retirement from active duty in 1979. In 1981, he became chairman of the NATO Pipeline Committee and the Secretary General's liaison officer to CEPS.

Weapons Technology May Stimulate Flow of Oil in "Depleted" Wells

A technique to boost the penetration power of non-nuclear warheads may also blast additional oil flow paths for hard-to-reach reservoirs.

The idea isn't new. Shaped charges designed for armor-piercing warheads have already been used in the oil industry. However, Los Alamos National Laboratory scientists C.W. Mautz and J.V. Reps say an inexpensive variation of the shaped charges may improve rock fracturing and provide additional paths for the oil flow.

The shaped charges are cylindrical explosives with metal, cone-shaped liners. When the explosive is detonated, the heat and force turn the metal into a fast, fluid jet that penetrates the target, whether it be a tank, a submarine, or a wall of sandstone.

"With the right design, penetration can be spectacular," says Mautz. "Probably the best-known example of the shaped charge is the old World War II bazooka. This technique is an extension of that."

Shaped charges are also effective for use in sluggish, unproductive natural gas wells, Mautz says. **FL**

DFR-CR First DLA Element to Receive Joint Meritorious Unit Award

by Linda Stacy-Nichols

On 28 March 1985, Lieutenant General Donald M. Babers, USA, Director, Defense Logistics Agency, presented the Joint Meritorious Unit Award (JMUA) to the Defense Fuel Region Caribbean (DFR-CR) at DLA Headquarters, Cameron Station, Alexandria, Va. The region, with headquarters at Homestead Air Force Base, Fla., is a field element of DFSC. The JMUA, accepted by Commander Ronald C. Nelson, SC, USN, on behalf of his command, is the first ever received by any DLA activity.

The JMUA, which is awarded in the name of the Secretary of Defense, recognizes meritorious achievement or service superior to that which is normally expected under combat or emergency conditions, or under extraordinary circumstances that involve the national interest.

The award to DFR-CR covered the period November 1982 through January 1984, during which time DFR-CR provided fuel for operation URGENT FURY in Grenada, AHUAS TARA II in Honduras, and the Falklands crisis and subsequent operations on Ascension Island. In the words of the JMUA citation, the five military members and ten civilians employed throughout the award period supported the "creation, coordination, and establishment of fuel resources in an area where these essential logistic lifelines were previously non-existent."

In addition, the DFR staff accommodated a threefold increase in crude oil liftings for the Strategic Petroleum Reserve (SPR). The SPR is designed to reduce the nation's vulnerability to the effects of a severe oil disruption. Although the SPR is funded and managed by the Department of Energy, DFSC is the primary procurement agent for the crude oil. DFR-CR oversees the quality of SPR crude oil from Mexico.

> *"By year's end, the time period could be viewed as an astounding mixture of intensified mission work interspersed with challenges that required immediate and innovative action."*

Lieutenant General Babers presents the JMUA to Commander Nelson. RADM Ryan is at right.

DFR-CR personnel also experienced a dramatic upswing in traditional mission assignments, including a threefold increase in tanker loadings (more than 160 for the year) and a fourfold increase in total volumes of fuel (to 40 million barrels annually).

This work was completed during a tumultuous time. The organization moved from Puerto Rico to mainland Florida in July 1983, undergoing a 50 percent turnover rate in core personnel which further strained the region's resources. DFR-CR also established three new resident field offices during the year.

Personnel who were part of the region during the award period include Commander Ronald C. Nelson, SC, USN; Major Charles C. Cumberworth, QM, USA; Captain Larry D. Moore, QM, USA; Captain James Bochert, QM, USA; Senior Master Sergeant Billy R. Chandler, USAF; William D.

Rankin; Robert Burgess; Sergio Santiago; Don T. Youngworth; Robert N. Scott; Julia E. Rosado; Patricia A. Souleyrette; Aida I. Alberdeston; Aimee A. Stover; and Robert E. Koeller.

Half of DFSC's 10 Defense Fuel Regions have responsibility for fuel distribution and quality in the continental United States. The remainder are assigned distribution tasks throughout other portions of the world. Generally, the regions keep customers apprised of supply and transportation problems, oversee fuel quality assurance, and ensure delivery at wholesale and retail locations. DFR-CR is responsible for these tasks in Central America, the Dominican Republic, Haiti, Jamaica, Mexico, Netherlands Antilles, Puerto Rico, South America, Tobago, Trinidad, the Virgin Islands, and the West Indies.

The JMUA will add a permanent honorary ribbon to the DFSC flag.

FL

William Rankin Receives Meritorious Civilian Service Award

by Linda Stacy-Nichols

The Joint Meritorious Unit Award spotlighted the cooperative achievements of the Defense Fuel Region Caribbean (DFR-CR). One civilian member of DFR-CR, however, was singled out for additional recognition. William Rankin, the senior quality assurance specialist in the region, received the Defense Logistics Agency (DLA) Meritorious Civilian Service Award on 29 March 1985.

Mr. Rankin was credited with a wide range of initiatives, but the award specifically cited his work in Grenada, Honduras, and the Falkland Islands. His leadership was counted as a critical factor in providing mission essential fuels to U.S. and allied forces during these episodes.

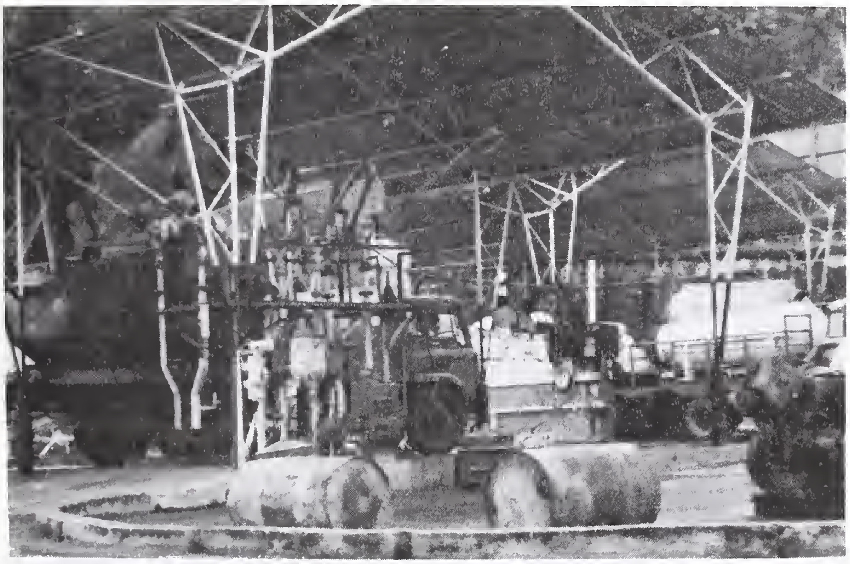
He also contributed substantially to exercise OCEAN VENTURE '84 by establishing fuel supplies to reactivate Ramey Air Force Base, Puerto Rico.

Innovation and imagination were the keys to Mr. Rankin's success in establishing new resident field offices in St. Croix, Puerto Rico, and Venezuela. These organizations were created at contractor facilities to provide quality assurance for fuel contracts within the area. (Fuel awards had risen to a total worth of $1.2 billion a year.) Several suppliers had no prior experience with fuel quality assurance requirements as mandated by U.S. government contracts. The work was especially challenging because Mr. Rankin had to negotiate through several different language barriers in an environment where the usual administrative support simply did not exist. As evidence of the success of these efforts, these young residencies have yielded over 400 million gallons of jet and diesel fuels.

Mr. Rankin also completed extensive overhaul work on quality assurance sytems and procedures. He formulated quality and quantity control standards for crude oil in Mexico, resulting in the lowest worldwide Strategic Petroleum Reserve cargo loss ever and saving a substantial amount of money.

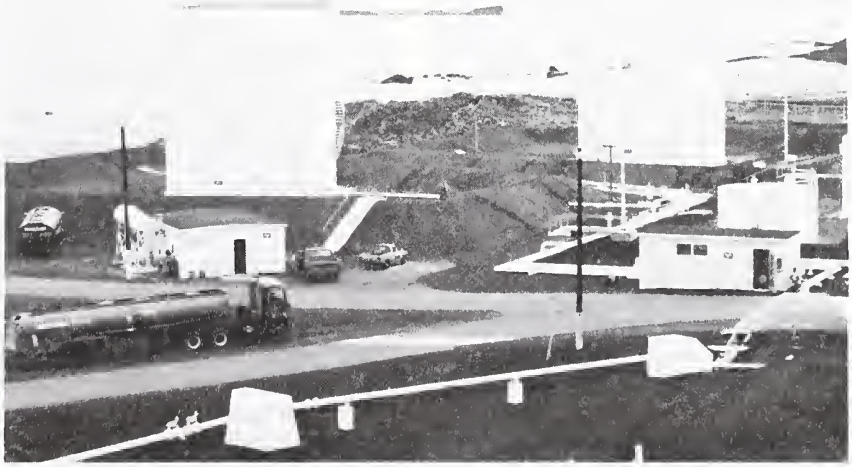
Mr. Rankin has been employed by DLA since 1970. In his current position he is responsible for quality assurance programs throughout the Caribbean and Central and South America. He supervises resident field offices in St. Croix, Puerto Rico, Netherlands Antilles, and Mexico. He is also the primary in-theater technical advisor on petroleum quality assurance matters for military commands in the region.

FL



Grenada.

"Records were still being shipped, families settled, boxes unpacked. Meanwhile, resident field offices were being set up in Puerto Rico, Mexico, and St. Croix. The personnel turnover rate at the time was 50 percent."



Ascension Island.

The Work Behind the JMUA

by Linda Stacy-Nichols

> *"They would have known that a series of military operations would keep the region's core personnel zigzagging from one end of the Caribbean to the other, overseeing fuel supplies for U.S. and allied troops. Throughout the year, personnel would build logistical fuel support lines 'from the ground up' in Honduras, supply fuel to British forces on Ascension Island during the Falklands crisis, and rapidly react to provide fuel for OPERATION URGENT FURY in Grenada."*

The Falklands. Honduras. Grenada.

In late 1982, if the staff of the Defense Fuel Region Caribbean (DFR-CR) could have seen the news headlines for the next 14 months, they would have known.

They would have known that a series of military operations would keep the region's core personnel zigzagging from one end of the Caribbean to the other, overseeing fuel supplies for U.S. and allied troops. Throughout the year, personnel would build logistical fuel support lines "from the ground up" in Honduras, supply fuel to British forces on Ascension Island during the Falklands crisis, and rapidly react to provide petroleum for OPERATION URGENT FURY in Grenada.

No headline, however, would cover the other challenges the year would bring to the DFSC's Caribbean field element. Crude oil liftings in Mexico for the Strategic Petroleum Reserve (SPR) would quadruple, requiring constant quality assurance attention. At one point in the year, the staff of the joint service/civilian unit would dwindle to one-half its customary number. In the middle of 1983, a long planned relocation of the DFR-CR Headquarters from Puerto Rico to Homestead Air Force Base, Fla., would begin. Meanwhile, the region's routine mission would increase dramatically; tanker volumes would treble, fuel amounts, quadruple.

The phenomenal period began for Commander Ronald C. Nelson, SC, USN, and his staff in November 1982 when the Falklands crisis was intensifying. The DFR provided quality assurance support for emergency supplies of fuel, upgraded tanker cargoes needed by British forces and U.S. troops, and developed quality controls to ensure fuel was consistently on-specification. The region also helped establish an exchange agreement between the U.S. Air Force and the United Kingdom at Ascension Island. This is an ongoing agreement, continuously monitored by DFR-CR, which has already provided over 2 million barrels of jet fuel.

In July 1983, the long-planned relocation of regional headquarters from Roosevelt Roads, Puerto Rico, to mainland Florida was underway. Records were still being shipped, families settled, boxes unpacked. Meanwhile, resident field offices were being set up in Puerto Rico, Mexico, and St. Croix. The personnel turnover rate at the time was 50 percent.

It was during this tumultuous time that DFR-CR faced its biggest challenge in a year marked by challenges. Troops participating in exercise AHUAS TARA II in Honduras needed immediate and ongoing supplies of fuel.

Exercise participants needed both ground and aviation fuels. There was only one refiner available in the country; production, quality control, and fuel distribution were in a primitive state. With these limited resources, DFR-CR personnel developed supply sources and quality assurance programs from the ground up, ensuring that primitive supply patterns were made to mesh with the technological demands of the exercise. DFR-CR also performed the follow-up checks for fuel supplies, working in remote, often dangerous, jungle and mountain sites. These follow-on actions are credited with creating a harmonious relationship among contractors and military forces. AHUAS TARA III continues to demand fuel support from the region.

As events at Ascension Island and Honduras went on, the DFR's basic mission was increasing in un-

Seawise Giant.

precedented fashion. Regular tanker loadings trebled for a total of 160 for the year. The amount of fuel acquired quadrupled over the same time period a year earlier—for a total of 40 million barrels.

Then, in the early morning of 25 October 1983, the phone rang at Defense Logistics Agency, Cameron Station, Alexandria, Va. In just a few hours, soldiers of the U.S. Army's 82nd Airborne Division, N.C., would deploy to Grenada, a tiny Caribbean island which served as the temporary home for some 600 students attending St. George's University. The mission to evacuate these students (along with some British nationals) involved Black Hawk helicopters which were flying to the island. Scheduled to arrive in late afternoon on the first day of the mission, they would need fuel immediately thereafter.

To support the Grenada operation, the regional field office worked closely with DFSC Headquarters in Alexandria. The initial refueling involved C-130s, nicknamed bladder birds because they are each equipped with two 6,000-gallon collapsible fuel bags. These bladders were filled at a Defense Fuel Support Point at Roosevelt Roads, Puerto Rico.

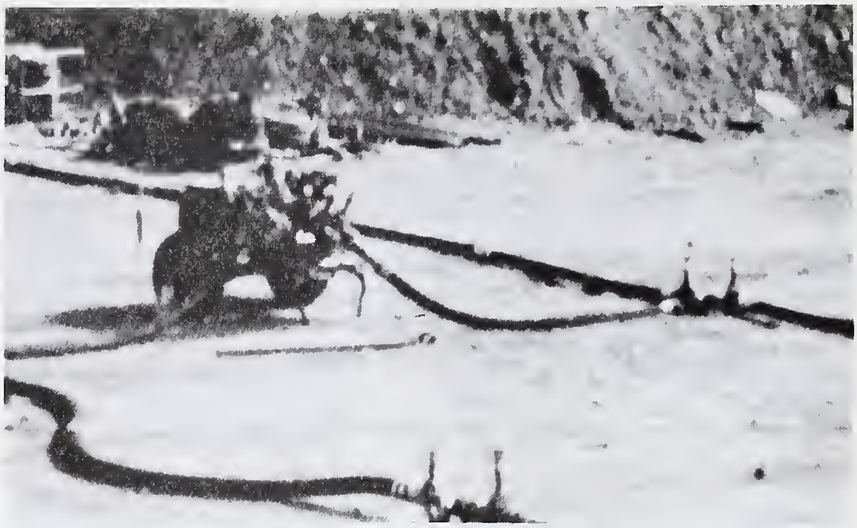
Once the initial fuel was supplied, the DFR-CR staff directed their energies toward procuring longer-term volumes of fuel. At first, there was no way to gauge how much fuel would be needed, or for what duration. Employees prepared for every contingency by creating a supply bridge, complete with stringent quality assurance monitoring points. The bridge extended from a Trinidad refinery across the Caribbean to contractor distribution terminals in Grenada. This avenue has provided more than 2 million gallons of fuel to island forces.

The Strategic Petroleum Reserve (SPR) was another area which required extensive attention throughout the year. Although the SPR is funded and managed by the Department of Energy, DFSC is the major contracting agent for the program. DFR-CR also plays a vital role, monitoring Mexican crude oil lifts for quality and quantity.

The year was marked by an incredible threefold increase in requirements—to 170,000 barrels per day. DFR-CR personnel established and staffed two major field distribution terminals to deal with the load: a remote site on the Mexican coast and the *Seawise Giant,* the world's largest crude oil tanker. About 30 million barrels of crude oil were finally delivered, an amount equal to two-thirds of the total annual program requirements. The DFR eventually sought temporary help to accommodate the massive quantities of Mexican crude oil.

Regional personnel also negotiated with Mexican government officials, cooperatively creating a whole new quality control program. The new program has reduced tanker demurrage delays and resulted in the smallest cargo loss rate ever. These procedures have been incorporated as guidelines for crude oil acquisition throughout Central and South America.

By year's end, the time period could be viewed as an astounding mixture of intensified mission work interspersed with challenges that required immediate and innovative action. Members of the region were able to relive the events of 1982 and 1983 on 28 March 1985, when Lieutenant General Donald M. Babers, USA, the DLA Director, presented the Joint Meritorious Unit Award to DFR-CR. **FL**



Honduras airfield refueling facility.

DCASMA Denver Presents Quality Excellence Award to Wyoming Refining Co.

by Richard Doll

The Defense Contract Administration Services Management Area (DCASMA) Denver presented the Department of Defense Quality Excellence Award (DQEA) to Wyoming Refining Co. on 28 February 1985. Lieutenant Colonel Lawrence H. Baker, USAF, DCASMA chief, presented the DQEA to company Vice-President Harry Schleman during a ceremony held in Newcastle, Wyo.

The award, designed by the Department of Defense, honors contractors who consistently produce high quality material for the military services. To be eligible, the contractor must be free of quality procedural discrepancies for 12 months. The contractor must also demonstrate an excellent delivery record and have no financial, contractual, or security problems.

Wyoming Refining has been supplying JP-4 jet fuel to the military services for several years; the company ships the product to installations in Wyoming, South Dakota, and Colorado. The fuel is transported via pipeline and tank truck on a free-on-board destination and origin basis, with an average of 41 million gallons provided each year. The primary user of the fuel is Ellsworth Air Force Base, S.D. **FL**

DISPLAYING THE FLAG: From left to right, Lieutenant Colonel Lawrence Baker, DCASMA Denver chief; Dick Doll, quality assurance specialist (seated); Harry Schleman, vice-president of Wyoming Refining Co.; Nick Edmunds, chief chemist of the company; Irwin Allen, 30-year employee of the plant; and Pat Havener, plant manager.

> *"The project also verified that filling fuel cells in turbine-driven aircraft with JP-5 and JP-8 is the most effective preservative procedure, and it enables the aircraft to remain fully mission capable throughout the storage period. The project also determined that JP-4 can be used as an alternate fuel."*

Army Helicopters Can Be Pre-Positioned

by Major Wayne L. Dandridge, USA

The Army may have found one answer to two particularly difficult questions: how to rapidly reinforce the North Atlantic Treaty Organization (NATO) with Army aircraft without using U.S. Air Force strategic airlift capabilities needed for higher priority missions, and, how to cost-effectively overcome frequent shortages of repair parts, crew personnel, and fueling capabilities in Army aviation units and still maintain readiness. The answer to both questions may be pre-positioning.

The Joint Science Project (JSP), conducted in the Federal Republic of Germany from January 1982 through September 1983, provides techniques for storing both strategic and tactical Army aircraft. The project, jointly conducted by the Army Aviation Systems Command and U.S. Army, Europe, validated the feasibility of using long-term storage methods for helicopters. Results indicate that the most sophisticated helicopters may be stored fully fueled and combat ready and that they will remain fully mission capable.

These aircraft can be stored up to 14 months in a 40- to 50-percent humidity-controlled environment (and estimates indicate probably much longer, perhaps up to 4 years) with minimum preservation and suffer no significant deterioration. Aircraft stored using these storage methods can be made ready for combat operations in about 30 minutes by a quick "depreserving" and arming.

Results of the JSP confirmed the findings of the 1981 report, "Aviation Materiel Combat Ready In-Country" from the Army Logistics Evaluation Agency, New Cumberland Army Depot, Penn., which stated ". . . storage of aircraft for a 6-month period (and probably much longer) does not constitute a technical problem." Specifically, the science project proved that unit level maintenance personnel can prepare and store aircraft in a fully mission capable condition. The project also verified that aircraft can be stored using these methods for up to a year without controlled humidity, if the storage area is dry and has free ventilation.

Forty to 50-percent relative humidity control proved to be the key to successful long-term storage. This relative humidity rate inhibits corrosion, stabilizes fuel, and prevents elastic seals and hoses from drying out. The science project verified that temperature ranges of central Europe have little effect on stored aircraft except for the expansion and contraction of fuel in the aircraft's fuel cells. Easy-to-use, rule-of-thumb formulas were developed for determining proper fuel levels for stored aircraft that will avoid fuel expansion and contraction problems.

The project also verified that filling fuel cells in turbine-driven aircraft with JP-5 or JP-8 is the most effective preservative procedure, and it enables the aircraft to remain fully mission capable throughout the storage period. The project also determined that JP-4 can be used as an alternative fuel. If humidity is kept within the 40- to 50-percent or lower ranges, condensation will not form in the fuel systems. Without water, contamination and microbiological growth cannot occur.

Special tests of the grease, oil, hydraulic fluid, and fuel in 14 AH-1S modernized Cobra helicopters used in the JSP confirmed that fuel and lubricants will remain stable throughout long-term, humidity-controlled storage. Test results support extending the report and inspection intervals for the main driveshaft and tail-rotor flex couplings on all AH-1, UH-1, and OH-58 aircraft, either in or out of storage.

Specific preservation measures to be taken include lubricating the aircraft in accordance with the 50-hour lube requirements, coating exposed portions of the hydraulic system with hydraulic fluid, filling the fuel controls with 10-weight oil, topping off the fuel tanks with fuel, removing the batteries, and electrically grounding the aircraft. Only 6 unit-level maintenance manhours are needed to preserve each aircraft.

Strategic pre-positioning of Army aircraft in U.S. Army, Europe, is already programmed for the not-too-distant future. Many aviation unit commanders have expressed interest in the tactical pre-positioning of some of their aircraft until they have additional personnel and repair parts available. The United Kingdom has adopted many of the JSP methods for use at their helicopter storage depot. The U.S. Air Force and the Australian, French, and German armies also have expressed interest in the new storage methods.

If you need to know more about the new storage methods, write: Commander, U.S. Army Aviation Systems Command, Attention: AMSAV-WS/Val Berger, 4300 Goodfellow Boulevard, St. Louis, Mo., 63120. FL

ARMY LOGISTICIAN, March-April 1985.

Major Wayne L. Dandridge, USA, is assigned to the Office of the J4, United States European Command, in Germany. He is a senior Army aviator, a maintenance test pilot, an instructor pilot, an instrument flight examiner, and an aircraft maintenance officer. He holds a bachelor of science degree in aeronautical science from Embry-Riddle Aeronautical University, Daytona Beach, Fla., and a master's degree from Florida Institute of Technology, Melborne, Fla., and is a graduate of the Armed Forces Staff College, Norfolk, Va.

Pride Refining Opens Pipeline to Carswell

by Lash Lashbrook

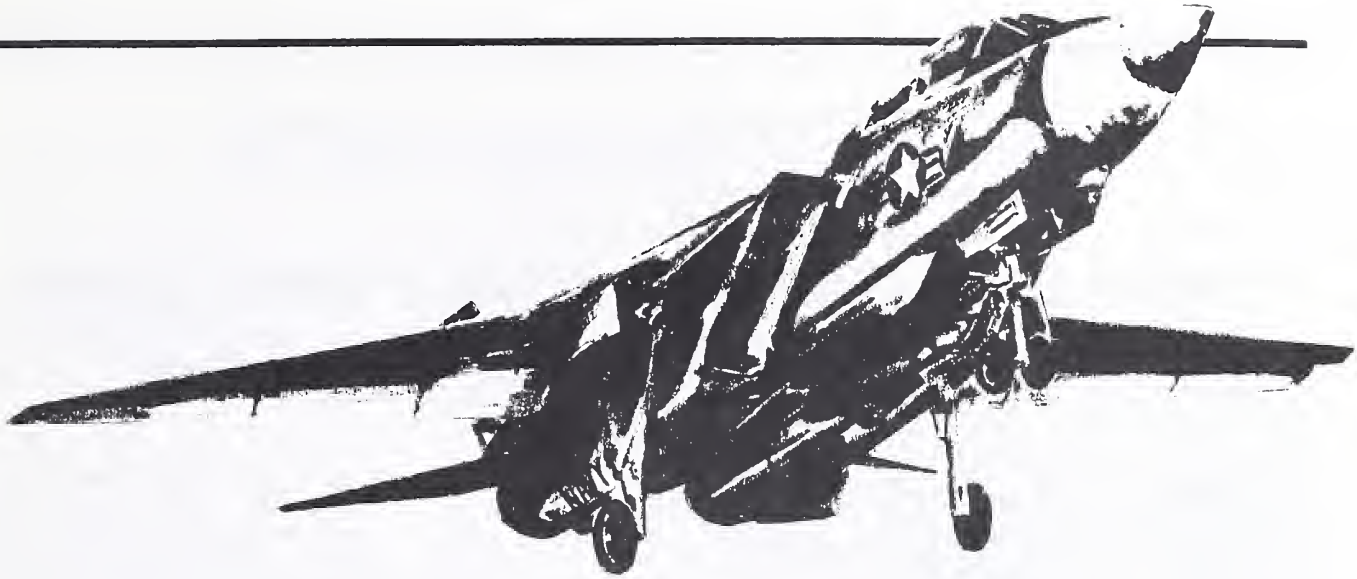
OPENING THE SPIGOT: From left to right, Lieutenant Colonel Lloyd M. Johnson, DFR-SW commander; Colonel O.K. Lewis, 7th Bomb Wing commander; and Michael Wheatley, president of Pride Refining Co.

A new jet fuel pipeline that will carry Abilene-produced jet fuel into Carswell Air Force Base (AFB) was lauded on [14 August 1984] as "the culmination of a great effort between the military and industrial communities."

Speaking at the ceremony inaugurating the 14-mile pipeline, Colonel O.K. Lewis, commander of the Strategic Air Command's (SAC) 7th Bomb Wing (BW), said the rapid transport of fuel to the base will "enhance the mission of Carswell, improve safety, and add to the combat readiness (capability) of the wing."

Representatives of Abilene-headquartered Pride Refining Inc. and Carswell Pipeline Co. traveled to Carswell AFB Tuesday morning [14 August 1984] to help dedicate the line that can move up to 588,000 gallons of military jet fuel daily.

Carswell Pipeline Co., an affiliate of Pride, will operate the 6-inch pipeline connecting its Aledo Terminal west of Fort Worth with the aviation fuels storage area on this massive SAC base.



The new line is the first phase of a 154-mile pipeline project that will eventually move jet fuel for SAC's Boeing B-52 Stratobombers and KC-135 Stratotankers, F-4 Phantom fighters of the Air Force Reserve's 301st Tactical Fighter Wing, and other jet aircraft directly from Pride's Abilene refinery through the Aledo Terminal to Carswell.

On hand for the ribbon-cutting ceremony were Mike Wheatley, president of Pride Refining; Virgil Price, vice president of refining and transportation for Pride Refining; and Bill Catlett, executive vice president for operations at Carswell Pipeline Co.

Wheatley expressed his appreciation for the extensive assistance given to the civilian side of the project by military personnel at Carswell, from SAC headquarters at Offutt AFB, Neb., and other military offices.

Also on hand was Lieutenant Colonel Lloyd Johnson, USA, from the Defense Fuel Region Southwest, Houston, whose office worked closely with Pride and Carswell Pipeline in planning and construction of the new jet fuel line. He represented Rear Admiral William J. Ryan, SC, USN.

From the Air Force were: Colonel Chuck Gillis, 7th BW deputy commander for resources; Lieutenant Colonel Don Matkin, Captain Clay Church, and Lieutenant Edward Kujanowicz, squadron commander, executive officer, and fuel management officer, respectively, of the 7th Supply Squadron; and enlisted men and women of the squadron who are responsible for handling the fuel.

Colonel Lewis said he received good news and bad news when first informed of the project. The good news, he said, was that the pipeline had been approved; the bad news was that a portion of the line was going to be laid under the front lawn of his quarters at the base.

Describing the advantages of the new pipeline system to the Air Force, Wheatley said it will provide: a stable, year-round supply of jet fuel to Carswell regardless of the weather; reduced environmental hazards; a reduction in the number of military personnel now required to handle fuel offloading from Pride's fleet of tanker trucks at the base; greater security for the movement of fuel; and savings in the cost of transporting the fuel.

The advantages to Pride, he added, include streamlining of its operations, improved efficiency, reassignment of transport personnel to other areas where they are needed, and better utilization of capital.

Under the previous tanker truck transporting system, 32 trucks traveled between Abilene and Carswell daily carrying 8,000 gallons of jet fuel each, a total of 256,000 gallons daily or 1,280 million gallons a week.

With the opening of the new 14-mile pipeline, 22 trucks will transport 176,000 gallons of fuel daily from Abilene to the Aledo Terminal 7 days a week for a total of 1.232 million gallons a week.

In addition to 31 percent fewer trucks on the road, 616 miles per day, or 4,312 miles per week, will be saved.

When the second phase of the pipeline is opened, the entire Pride tanker fleet serving Carswell AFB will be eliminated.

He emphasized that there would be no reduction in the number of Pride's Abilene-based drivers; they will be reassigned to other routes in the company's product transport system.

Pride Refinery provides military jet fuel to Air Force and Army bases throughout Texas and parts of New Mexico and Oklahoma.

When the Abilene-Aledo terminal phase of the pipeline goes into operation in November, the system will be used to move military and commercial jet fuel and diesel fuel to Pride customers in the Dallas-Fort Worth metropolitan area. The end result will be a safer, faster, versatile, efficient, and lower cost system, Wheatley said. FL

Reprinted with permission from the *Reporter-News,* Abilene, Texas.

Lash Lashbrook is the oil/energy editor for the Reporter-News.

"There is an airdrop of fresh fruit in May and it's a point of pride with the Army people who pack the supplies when watermelon survives the fall."

Antarctica—The Big Ice Cube Down South

by Evelyn D. Harris

The Military Sealift Command (MSC) provides supplies annually to U.S. forces in Antarctica under OPERATION DEEP FREEZE. DFSC supports the operation by providing bunkers for the vessels en route. This year, DFSC awarded a contract to a New Zealand company to supply 10,000 barrels of Navy special fuel oil at Littleton, New Zealand. This article describes the activities of the military support staff in Antarctica, certainly one of DFSC's coldest southern customers.

(This year's MSC voyage will be historical because it marks the end of an era for the tanker vessel USNS *Maumee* and her sister ship, the USNS *Yukon*. These vessels, which have reinforced hulls to navigate ice-laden water, will be replaced next year by newer ships with diesel-fueled engines.)

Antarctica is the coldest, driest, windiest place on Earth. The world's lowest recorded outdoor temperature, minus 128.6 degrees Fahrenheit, was reached at the Soviet Union's Vostok Station in July 1983. Even though Antarctic ice contains 70 percent of the world's fresh water, this frozen continent is considered a desert because it gets less than 3 inches of precipitation a year. Winds in Antarctica routinely exceed hurricane force, and, at Commonwealth Bay, winds in excess of 200 miles an hour have been recorded.

The coldest continent covers an area of 5.4 million square miles, larger than the United States and Mexico combined. Ninety-eight percent of this area is covered by ice with an average thickness of more than a mile—3 miles at some points. That's more than 7 million cubic miles of ice—enough to raise the level of the world's seas by 200 feet if it melted.

THE ABOMINABLE SNOWMAN? No. it's a member of the NSFA Fuels Division, preparing the fuel pits.

Antarctic waters have many fish (including one kind with an antifreeze protein in its blood which scientists are studying), and its coastal areas abound with penguins, whales, and seals. The only people in the area are those who carry out or support scientific research.

The Naval Support Force, Antarctica (NSFA), provides logistical support to U.S. scientists and its commander leads a joint-service team in what is called OPERATION DEEP FREEZE. U.S. Army personnel provide cargo handling and terminal operations support, the U.S. Air Force Military Airlift Command provides transportation for people and supplies, and the Coast Guard has its largest class cutters down there from November through April. In addition, civilian contractors are involved in various activities. This combination of personnel is similar to the U.S. space program. DEEP FREEZE annually brings in thousands of tons of cargo, airlifts hundreds of scientists and support personnel, and provides overall support for the U.S. scientific mission.

The United States operates three year-round scientific research and support stations in Antarctica, plus a number of other stations and field camps during the antarctic summer, October through February. The

Gassing up in the Antarctica.

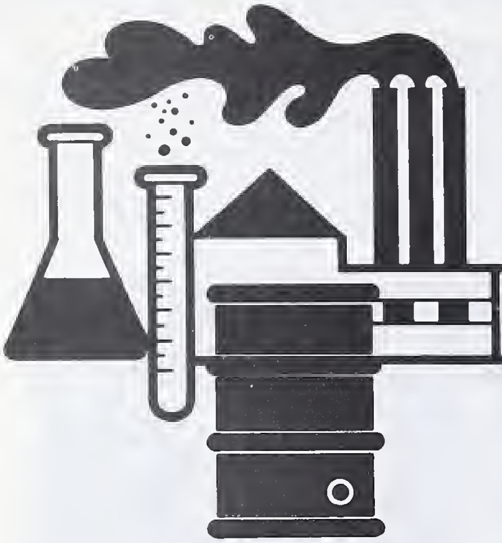
largest is McMurdo Station, DEEP FREEZE "summer" headquarters, which is used as a staging base for inland research projects. Its 85 buildings make McMurdo the size of a small town. The two other stations are Amundsen-Scott, a large geodesic dome at the geographic South Pole; and Palmer, the only U.S. station north of the Antarctic Circle.

This year, the Navy has 810 people assigned to OPERATION DEEP FREEZE in four locations: sunny Port Hueneme, Calif., NSFA's headquarters during the antarctic winter, where DEEP FREEZE personnel are trained; Naval Air Station Point Mugu, Calif., headquarters of the Antarctic Development Squadron VI, which flies UN-1N Huey helicopters and LC130 aircraft; Detachment Christchurch, in New Zealand, advance staging base for DEEP FREEZE; and Antarctica itself. In 1985, 68 Navy people are wintering over at McMurdo. Wintering over is a popular assignment. "We got 453 applications for 66 billets," says Jack Henderson, who screens the enlisted applicants.

Those accepted in the winter-over crew go from 19 February through August or September—when the advance "summer" contingent comes in with fresh supplies—without seeing a new face. (There is an airdrop of fresh fruit in May, and it's a point of pride with the Army people who pack the supplies when watermelon survives the fall.) They'll have to learn to deal with "whiteouts," the Antarctic equivalent of sandstorms, when high winds blow ice crystals so thick and fast a person can get lost walking from one building to another. They'll have to avoid hypothermia and dehydration in the cold, dry air and deal with other problems. One of the unexpected challenges is fire—with 6 percent indoor humidity, McMurdo's wooden buildings become tinder dry, and there isn't much water in non-frozen form.

DEEP FREEZE duty isn't easy, but meeting all of these challenges together and knowing they've made an important contribution to science create a great pride and camaraderie in the NSFA crew. As one veteran of the antarctic winter says, "I'd go again in a minute." **FL**

Evelyn D. Harris is a writer with the American Forces Information Service.



FUEL LINE GLEANINGS

STANDARD ORGANIZATION UNDERWAY FOR DFSC-P

The DFSC Directorate of Contracting and Production has completed the first stage of transformation under the Defense Logistics Agency Standard Organization for Contracting and Production. Effective 19 May 1985, the Services Division was disestablished and designated as the Specialty Fuels Division with responsibility for into-plane services, bunkers, coal, and bulk lubricants.

A new division, called the Special Acquisitions Division, is responsible for storage and aircraft refueling, commercial activities, studies, and base contracting.

Although some personnel reassignment will be necessary, it will be kept to a minimum and no adverse actions will result. Personnel assigned to functional areas such as storage, coal, et cetera, will continue in their current positions.

BASE PROCUREMENT INVOLVES NEW DUTIES

The new Base Procurement Branch, Special Acquisitions Division, includes some new responsibilities for DFSC. The division will contract for operating supplies, equipment, material, and services for Defense Logistics Agency Headquarters, DLA Administrative Support Center, and DFSC supported activities. The division will also develop and prepare Blanket Purchase Agreements (BPAs) for supplies, equipment, and services for use DLA-wide and provide DLA-wide guidance and assistance on the issuance of orders against BPAs, and/or consolidate requirement-type procurements.

PITTSBURGH COAL CONFERENCE ANNOUNCED

The University of Pittsburgh and the Pittsburgh Energy Technology Center of the Department of Energy are sponsoring the second annual Pittsburgh Coal Conference, which will be conducted from 16-20 September 1985. The conference will serve as a forum for discussion of coal technologies currently under study that show promise of breaking into the marketplace. For further details and registration information, write to Pittsburgh Coal Conference, MEMS, One Northgate Square, 2 Garden Center Drive, P.O. Box 270, Greensburg, Penn., 15601, or call (412) 836-6813.

DOE SPONSORS AWARD PROGRAM

The Department of Energy (DOE) has announced an awards program which recognizes research achievements in renewable energy and long-term production of fossil resources. Each award will consist of a citation signed by the Secretary of Energy, a medal, and a $10,000 cash prize. Additional information is available from DOE's Office of Energy Research, which will manage the awards program.

AMERICANS SPEND MOST FOR VEHICLE ENERGY

The average American household spends 24 percent more for energy to operate its motor vehicles than for energy used in the home, according to a new study by the Energy Information Administration.

The survey shows that the average household spent $1,317 in 1983 on fuel to power its vehicles while spending $1,063 for all energy used in the home. Eighty-six percent of American households—a total of 72.2 million—own one or more motor vehicles for personal transportation.

NUCLEAR-POWERED ELECTRICITY ON UPSWING

For the first time, nuclear energy ranks second among fuel sources used to generate electricity in the United States, according to 1984 statistics from the Energy Information Administration. Nuclear replaces hydroelectric power, which had ranked second in 1983. Coal continues as the number one energy source used by utilities, generating 56 percent of the total in 1984.

FIX SEALS C-141 REFUELING LINES

Safety modifications to C-141 Starlifter refueling lines last fall have plugged the leaks, according to materiel management officials at the Air Logistics Center, Warner Robins Air Force Base, Ga.

Modification manager Runell Collins said the problem was caused by a 4-inch single-point refueling line inside the C-141's fuselage. The line was rupturing during aerial refueling, allowing fuel to spill inside the fuselage, she explained. As a result, the Military Airlift Command placed the entire fleet of 271 C-141s under severe refueling restrictions.

The modification work, carried out by Lockhead Georgia Co., involved a new design that eliminated a joint near the bend of a tube. A new stainless steel insert in the couplings and additional support bracketry were added to allow better tube alignment and to strengthen the couplings.

Ms. Collins said the new tube eliminated fuel surge vibrations that caused separation of the tube inside the fuselage. No fuel spills have occurred since the modification was made.

DFSC SUPPORTS OPERATION BORDER STAR

DFSC awarded two competitive contracts in February to support OPERATION BORDER STAR, which took place in March at Fort Bliss, Texas. About 30,000 Air Force, Army, Marine Corps, and Canadian forces were deployed for the exercise. The quantities of fuel involved were 593,000 gallons of gasoline and 1,240,000 gallons of diesel fuel. The gasoline was delivered into bladders at Biggs Army Airfield, El Paso, Texas, and the diesel fuel was picked up by military personnel at the contractor's plant.

The joint readiness exercise provided a simulated combat environment to exercise, train, and evaluate commanders, staffs, and forces in joint operations. OPERATION BORDER STAR included command post and field training exercises between opposing and friendly forces at Fort Bliss, the White Sands Missile Range, and other support areas.

About 500 tracked vehicles, 2,500 wheeled vehicles, and 300 helicopters and airplanes were used in the exercise. Most of the fixed-wing aircraft operated from Holloman and Cannon Air Force Bases, N.M., Davis-Monthan Air Force Base, Ariz., and Biggs Army Airfield, El Paso, Texas.

AOAP DATA SYSTEM SET

Extension of the Army oil analysis program (AOAP) standard data system was completed last October. The systems consists of 22 Wang 2200 MVP minicomputers installed at AOAP laboratories Army-wide and at the Army Materiel Command Materiel Readiness Support Activity, Lexington, Ky. Use of the system allows the laboratories to maintain accurate wear histories of the components enrolled in the AOAP, resulting in more efficient laboratory operation and improved maintenance management control.

SPR YEAR'S TALLY

The Special Contracts Division of the Directorate of Contracting and Production awarded 58 contracts in calendar year 1984 to support the Department of Energy's Strategic Petroleum Reserve. A total of 55,320,000 barrels of crude oil were purchased at a cost of $1,610,646,150. The average value of each contract was $27,769,761. All purchases were made in the spot market under continuous open-type solicitations.

DFSC HOSTS STOCK ROTATION POLICY MEETING

On 13 March 1985, the DFSC Directorate of Supply Operations hosted a meeting to conclude work on the stock rotation policy for dormant Defense Logistics Agency-owned fuel. Representatives from the military services and the Organization of the Joint Chiefs of Staff attended the conference to finalize the mutual policy. Under the new system, Joint Petroleum Offices overseas and continental U.S. Defense Fuel Regions will submit rotation plans to DFSC. These plans will identify dormant tanks and propose dates and locations for stock rotation. DFSC will review all proposals and grant final approval for fuel movements, with decisions to rotate stocks based primarily on data about fuel quality. Not only will the new policy improve planning and execution of stock rotation, it will provide increased visibility of the quality of dormant fuel. This policy will be incorporated into the revised Department of Defense manual, *Procedures for the Management of Petroleum Products.*

TANKERS STUDIED FOR FUEL STORAGE

On 20 August 1984, the Defense Logistics Agency (DLA) forwarded a proposal to the deputy assistant secretary of defense for logistics and material management concerning the storage of petroleum in reserve fleet ships. A Navy-chaired working group was formed to discuss the proposal with participants from the Office of the Secretary of Defense, the Maritime Administration, the Military Sealift Command, the Coast Guard, and DFSC and DLA in attendance. After meeting on 14 March, the group set forth a specific plan for further study.

This plans calls for fleet ships storing fuel to be positioned in fiscal year 1986. One million barrels of jet fuel, grade JP-5, will be stored in ships positioned at U.S. government installations. Locations selected for the study include Naval Supply Center, Jacksonville, Fla.; Naval Station Roosevelt Roads, Puerto Rico; Point Molate, Fuel Annex, Naval Supply Center Oakland, Calif.; and St. James Terminal, La.

These ships can be returned to active service within 10 days, thereby providing the potential for highly mobile storage facilities.

CENTER REACHES RECORD INVENTORY LEVEL

On 28 December 1984, DFSC attained the highest terminal and in-transit inventory in its history. The 92,672,000 barrel inventory of fuel ensures that the center is in the best possible overall readiness position. This success resulted from a storage acquisition/realignment program that has been ongoing for more than a year. The net result will be more fuel in the right places to support peacetime and wartime missions.

DFAMS TRAINING UNDERWAY

DFSC recently released Defense Fuel Automated Management System (DFAMS) training packages to 44 major reporting activities, thus completing the first phase in worldwide DFAMS training. This sets the stage for the next step, which is to determine activities in need of training and satisfy these needs. A survey accompanying the training materials will provide information concerning local training capabilities and requirements for DFSC assistance.

The training materials were developed for DFSC by the Department of Agriculture Graduate School. Included in the materials were a DFAMS overview briefing

New Facility at Berkeley Lab to Test Catalysts

The new catalyst test facility at the Lawrence Berkeley Laboratory (LBL) Berkeley, Calif., can reveal the efficiency and longevity of solid catalysts. Intended to both expand research and aid industry, the facility can be used by those within and outside the laboratory.

"With our equipment, we can determine the quantity and quality of products formed by the use of whatever catalyst is being tested," says LBL chemist Harvey Sokol. "This information gives a good indication of whether or not the catalyst would be successful on a commercial scale."

The development is expected to be particularly useful to the coal, gas, and chemical industries. Catalysts start, speed up, or slow down chemical reactions without undergoing chemical changes themselves. They play a crucial role in oil refining, petrochemical production, and upgrading of coal-derived gases and liquids for conversion to conventional fuels.

The facility is also slated for studies on the control of environmentally hazardous emissions during the burning of fossil fuels.

Computer controlled and programmed, LBL's catalyst test facility is designed to operate 24 hours a day, 7 days a week, with minimal human supervision. It can produce both liquids and gases. Thus far, Sokol and his colleagues have been using hydrogen and carbon monoxide gases in combination with metallic oxide catalysts to obtain methanol. They have also produced hydrogen gas by running methanol back through the facility's reactors.

booklet and slides, a DFAMS desk guide which provides a ready reference for persons involved in day-to-day DFAMS operations, and a DFAMS operators training course. The operators training course provides materials which can be used locally for formal training.

INTO-PLANE PURCHASE REQUESTS ADDED TO DFAMS

Into-plane purchase requests can now be included in the Defense Fuel Automated Management System (DFAMS). Requirements are determined by historical usage; new requirements are initiated by the DFSC customer. The new DFAMS system produces an automated purchase request which is transmitted through funds control for certification. The purchase request is then released for procurement action. Automated procedures used in preparation of the purchase request are also used to prepare the automated solicitation. Information garnered through this automated system will be used to generate future automated purchase requests.

LUKE AFB WINS API TROPHY

Chief Master Sergeant Claude A. McFalls, acting base fuels officer, recently accepted the 1984 American Petroleum Institute (API) trophy award on behalf of Luke Air Force Base, Ariz. Secretary of the Air Force Verne Orr and API President Charles Dibona presented the bronze and gold trophy during a Pentagon ceremony. Runners-up were Andersen Air Force Base, Guam, and Laughlin Air Force Base, Texas.

MUSEUM POWERED BY FUEL CELL

The Air Force Museum at Wright-Patterson Air Force Base, Ohio, now has an experimental fuel cell power plant that produces electricity and heat more efficiently and more cheaply than conventional methods. The Aeronautical Systems Division cosponsored the plant, which uses oxygen and hydrogen to produce 40 kilowatts of electricity. Heat from the process heats water in a cooling loop to warm the museum in winter.

Fluor Corporation in SPR Pipeline Talks

The Department of Energy (DOE) is negotiating with Fluor Corp. of Houston, Texas, for engineering services for a new pipeline to improve the oil distribution capability of the Strategic Petroleum Reserve (SPR).

The contract, which is estimated to cost $3-5 million, is part of an approximately $74 million plan to prevent future bottlenecks in crude oil distribution from the reserves in the event of an oil supply disruption.

Two commercial pipelines originally scheduled to feed SPR oil imports to the Midwest (Texoma and Seaway) have been purchased by firms planning to convert them to natural gas carriage. To counter the service loss, DOE plans a 50-mile, 42-inch pipeline from the Bryan Mound storage site near Freeport, Texas, to refining centers in the Texas City Area. Bryan Mound is one of five stockpile complexes making up the SPR. Upgrading at the Sun Terminal in Nederland, Texas, is also scheduled.

When the pipeline and other improvements are completed in 1987, the SPR will be capable of distributing up to 3.25 million barrels of oil per day. This amount is more than a million barrels per day more than is possible without the improvements.

The SPR currently contains more than 460 million barrels of crude oil.

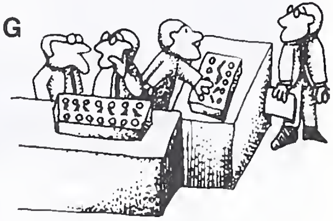
NEW MICROCOMPUTER FOR DFSC

The DFSC Directorate of Supply Operations is now using a microcomputer in its day-to-day operations. The computer will be used primarily to prepare automated inventory analyses and summaries. Based on information provided in the Weekly Bulk Petroleum Terminal Message Report, the microcomputer will substantially decrease preparation time for these analyses. The system is also expected to provide more timely information to managers to assist in the effective and economical worldwide distribution of bulk fuels.

DFSC HOSTS TANKSHIP COURSE

Approximately 25 DFSC employees recently attended an on-site tankship operations course for shoreside personnel. The 30-hour course, which is taught by an affiliate of the World Trade Institute, New York, N.Y., covered 26 major areas of tanker operations and problems, including tanker terminology and usage, the petroleum industry and tanker economics, U.S. government and international regulations, costs, charter parties, and tanker losses and spills.

DFR-E RECEIVES DFAMS TRAINING



From 24 March to 6 April 1985, representatives of the DFSC Office of Telecommunications and Information Systems and Directorate of Supply Operations provided Defense Fuel Automated Management System (DFAMS) training to the Defense Fuel Region Europe (DFR-E) and the 200th Theater Army Materiel Management Command. The training was designed to acquaint DFAMS users with the basic use and operation of telecommunications equipment recently installed at DFR-E. This equipment, which is linked via the Defense Logistics Agency communications network to the mainframe computer at Cameron Station, permits on-line input and validation, daily hard copy reports, and over 450 unique inquiries of the data base.

PERSONNEL NOTES

Rear Admiral Ryan Relinquished Command in May

Air Force Brigadier General Griffith Selected to Command DFSC

Brigadier General John E. Griffith

On 9 April 1985, the Air Force announced that Brigadier General John E. Griffith, USAF, would become the new DFSC Commander, effective 31 May 1985. Rear Admiral William J. Ryan, SC, USN, who had commanded DFSC since June 1981, planned to retire from active duty soon after relinquishing command.

A native of Kansas City, Kan., General Griffith enlisted in the Air Force in 1948 and served in various assignments before graduating from Officer Candidate School in 1957. He completed studies at the Armed Forces Staff College in Norfolk, Va., in 1971. In 1975 he was a distinguished graduate of the Air War College in Alabama and he received a bachelor's degree in social science from Troy State University, Troy, Ala.

His early assignments included duty with the 98th Bombardment Wing in support of United Nations' activity in South Korea; advisor to the Royal Danish Air Force; base chief of transportation and later commander of the 33rd Transportation Squadron, Tan Son Nhut Air Base, Vietnam; and senior Air Force representative at the Saigon Water Port and chief of Operation Special Express.

He served as chief of services and assistant transportation chief for the 61st Military Airlift Wing, Hickam Air Force Base, Hawaii, in 1966; in 1969 he was assigned to the special assistant for strategic mobility, Joint Chiefs of Staff, Washington, D.C. He also served as Programs Branch chief in the Air Force Directorate of Transportation.

In 1975 he was assigned to direct transportation for the Strategic Air Command. He later served as deputy chief of staff for air transportation at Military Airlift Command Headquarters, Scott Air Force Base, Ill. From September 1982 until his recent assignment as DFSC commander, General Griffith served as the director of transportation, Headquarters U.S. Air Force.

The general's military decorations and awards include the Distinguished Service Medal, the Legion of Merit with two oak leaf clusters, the Meritorious Service Medal, and the Air Force Commendation Medal with two oak leaf clusters.

General Griffith is married to the former Bonita I. Bowman of Overland Park, Kan. They now reside in Alexandria, Va.

Trafficteers Trundle in the Savings

A suggestion put forth by a DFSC Quality Circles group will save paper, storage space, employee search time, and at least $3,173 of Uncle Sam's money each year.

The idea, submitted by a group in the Transportation Division of the Supply Operations Directorate, deals with the printing method for computer-generated reports. "Trafficteer" group members Evelyn West, Rose Mary Yost, Joyce Brown, and Albert Kaplin noted there were many problems with reports printed on only one side of a sheet of paper. The computer data sheets were cumbersome, difficult to fasten, voluminous, and therefore difficult to store and use for reference. The one-sided printing also doubled paper use. The Trafficteers concluded that printing information on both sides of a sheet of paper would solve these problems.

After conducting informal polls to gauge other employee's opinions, the Trafficteers submitted their double-sided printing suggestion and it was adopted. The Defense Logistics Agency Administrative Support Center has upgraded computer software to effectively use the idea. This duplex (head to foot) form of printing is also being considered for wider government use.

The Trafficteers shared a cash award of $317 for their suggestion and are now working on another idea to recycle wastepaper. FL

Jean Parry-Hill Earns Her Procurement "Diploma"

RECOGNIZING THE GRADUATE: Colonel Wayne Lee, director of the DFSC Directorate of Contracting and Production, presents a Certificate of Training for the Centralized Intern Development Program to Jean Parry-Hill.

Jean Parry-Hill, who already holds bachelors' degrees in microbiology and psychology, and who has completed a year of dental school, recently added a third "diploma" to her collection.

After 3 years of classroom and on-the-job training, Ms. Parry-Hill has graduated from the Defense Logistics Agency Career Intern Training Program, procurement series. She is assigned to the Services Division (now the Specialty Fuels Division) of the DFSC Directorate of Contracting and Production.

She was selected for the training program in 1981, directly from the register of those who took the Professional and Administrative Career

Examination (PACE). The first year of training was the most difficult, she says, in part because she was unfamiliar with government lingo. (She recommends that all interns receive instruction in government acronyms before they enter a government classroom.)

In her third year of training, Ms. Parry-Hill wrote a research paper on the interface between the Office of Market Research and Analysis and the other divisions and offices of DFSC. She chose this topic, she says, because she felt there was often limited interaction between components in an organization and she wanted to delve into the dynamics of cooperation and communication throughout the center.

Although her DFSC career represents a significant shift from her degree subjects, she says the change has been refreshing in several ways. She especially enjoys the challenges of the contract negotiating process.

Ms. Parry-Hill works with the domestic ships' bunkers program, supplying fuel for Navy, Army, Coast Guard, and other federal civil customers.

DFSC procurement managers have found the 7-year-old Defense Logistics Agency (DLA) Career Intern Training Program to be an excellent source of 1102 (procurement series) employees. The program, which is administered by the DLA Centralized Intern Development Office (DCIDO), develops technical competence and supervisory skills in procurement interns.

The first phase of the three-stage program is set at the GS-5 level and requires successful completion of several school courses: Defense Small Purchases, Basic Management of Defense Acquisition Contracts, Defense Cost and Price Analysis, Defense Contract Negotiation Workshop, Contract Administration, and Government Contract Law. Courses on less technical topics, such as management, supervision, and briefing techniques, are also included.

At the GS-7 level, the intern is permanently assigned to a DLA buying center. Increasingly difficult tasks must be completed in a succession of rotational assignments. During the second year, DCIDO also arranges for each intern to attend the Management of Defense Acquisition Contracts course.

In the third phase of the program, the GS-9 intern must author a paper highlighting a solution to a problem or improvement to a condition that he or she has observed in the workplace.

The interns' contributions to DFSC have been noteworthy enough for the Directorate of Contracting and Production to more than double its annual requirement for interns from two to five. FL

DFSC Nominees Selected for Small and Disadvantaged Business Awards

Each year, Defense Logistics Agency recognizes employees throughout the agency who have excelled in assisting small and disadvantaged businesses. This year's DFSC nominees for the competition are Irving Scharf, a procurement agent in the Strategic Petroleum Reserve Contracts Division of the Directorate of Contracting and Production, and Carol Pugh, associate counsel in the Office of Counsel.

Irving H. Scharf

Mr. Scharf, who is the center's nominee for Excellence in Assisting Small Business Award, provided aid throughout the year to small businesses interested in supplying crude oil for the Department of Energy's Strategic Petroleum Reserve (SPR). Crude oil procurement is handled differently than other DFSC acquisitions, and it provides unique challenges to small businesses. Offers are solicited by a request for proposal (RFP), with continuous closing dates scheduled every 2 weeks; awards must be made within a week after each closing. The procurement pace is fast and complicated and requires exceptional efforts on behalf of DFSC buyers, who must negotiate quickly and effectively. There are other difficulties inherent to crude oil acquisition. For example, the government can accept offers involving one crude oil or a number of crude oils of the same type from a variety of sources. (This is referred to as a "basket.") The object, of course, is to obtain an acceptable type of crude oil at the lowest overall price. Offerors must also have assured sources of supply for both origin and destination deliveries. By law, at least 50 percent of the crude oil delivered for the SPR must be shipped by U.S. flag vessels.

Despite these complications, many small contractors are attracted by the high dollar value of the awards. Mr. Scharf has given these small businesses the full benefit of his knowledge and experience, explaining the intricacies of the procurement process. As testament to Mr. Scharf's patience and willingness to help, several small firms have made offers to supply SPR crude oil.

Carol A. Pugh

Working in a quite different arena, Ms. Pugh provided legal assistance to benefit small disadvantaged businesses (8(a) firms) faced with new Small Business Administration (SBA) standards.

A number of these 8(a) fuel suppliers are involved in DFSC's Posts, Camps, & Stations (PC&S) program, providing gasoline, heating oils, and diesel and residual fuels for domestic military installations and federal agencies. None of these firms own refineries and there are only a limited number of small refineries which produce commercial products for PC&S requirements that can be purchased by small dealers. Regular PC&S dealers, therefore, have depended almost exclusively on large refiners to supply their products. Historically, for DFSC contracts, SBA regulations had not required that 8(a) subcontractors use small sources.

Then, in February 1984, SBA revised their small business standards with an effective date of 12 March 1984. The new changes were devastating to the DFSC 8(a) program, because they incorporated the "non-manufacturer" rule. As applied to refined petroleum product dealers, the rule requires that these 8(a) companies furnish the product of a small refinery in the United States. If a dealer cannot meet this requirement, he or she would not be certified as "small" under SBA standards.

At the time the revision was to become effective, DFSC had over 25 requests for reservations from SBA. These requests were in various stages of the acquisition process. Solicitations had been issued, preaward surveys performed. Many of the firms involved had made financial and other commitments in anticipation of continued contract support.

Ms. Pugh was asked to assist in the resolution of the problems posed by SBA's revisions. From February to June 1984 she met with SBA officials, wrote proposed changes to the nonmanufacturer rule, and briefed those involved on the complications of the fuel market and the procurement changes resulting from the new standards. On behalf of DFSC 8(a) contractors, she proposed a permanent exemption from the rule for DFSC 8(a) PC&S firms. Although this goal was not realized, DFSC was granted a temporary exemption which became effective on 29 July 1984 and remained in effect until the end of the year. Because of Ms. Pugh's efforts, DFSC awarded 21 contracts to PC&S 8(a) firms during the extension period for an estimated value of $148 million. **FL**

EDWARD BIDDLE CHOSEN FOR EEO AWARD

Edward J. Biddle, deputy director of DFSC's Directorate of Contracting and Production, was selected for a 1985 Defense Logistics Agency (DLA) Manager's Equal Employment Opportunity (EEO) Award. DLA Director Lieutenant General Donald M. Babers, USA, presented the annual award on 19 April 1985 at the DLA Multicultural Observance.

The award, which is sponsored by the DLA Administrative Support Center EEO Office, is bestowed each year upon individuals who have excelled in some aspect of EEO management.

Mr. Biddle's award was based on his management of an affirmative action and recruitment plan within his directorate during fiscal year 1984. During the year, Mr. Biddle recruited, hired, and promoted a significant number of minorities and women within the series 1102 procurement career field. He also selected 19 trainees for positions with potential for promotion.

A federal employee for over 20 years, Mr. Biddle began working with DLA in 1963. He has served with DFSC since 1969, except for a year's assignment with the Office of the Secretary of Defense's Energy Policy Office. **FL**

☆U.S. GOVERNMENT PRINTING OFFICE: 1985-461-164:20016

UNIVERSITY OF FLORIDA
3 1262 09683 6654

FLARE

DFSC-AP

Defense Logistics Agency
Defense Fuel Supply Center
Cameron Station
Alexandria, VA 22304-6160

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

THIRD CLASS MAIL
POSTAGE & FEES PAID
DEFENSE LOGISTICS AGENCY
PERMIT No. G-53